

2003-05-25

SWEDISH RESEARCH POLICY 1980-1990

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Draft of Chapter 4

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ABSTRACT

This chapter analyses the development of the Swedish Research policy during the 1980's. The focus is on three features of a Mode 2 knowledge production policy, organisation of Research and on international trends. The aim is to investigate if there is a shift to Mode 2 knowledge production in Sweden during the period. The roots of this development are the sought in institutional change. The main questions are: Does Swedish Research policy shifts to Innovation policy?; Is there evidence of more co-operation between the state, the universities and the industry? and How does internationalisation affect the development?

In order to answer these questions I have used government reports on selected issues and the discussion of them. I have delimited the discussants to three universities and four industrial interest groups. The suggestions from the reports and the discussion have later been compared with the government bills. In addition, the bills have been investigated from the three features of Mode 2 knowledge production.

It is not evident that there is shift in policy. The investigation cannot verify that the layers of Science policy and Policy for Science is getting dominated by Innovation policy. The main issues in the Research policies are still at the end of the decade basic research in a typical Mode 1 environment. It is however clear that co-operation between the state, the universities and in the industry is becoming more important during the decade. It is also evident that the universities get more opportunities to organise research in a more free way. Internationalisation becomes a policy issue in the mid 1980's and it is of growing importance during the following years. The argument for internationalisation is that it enhances both basic research and the quality of co-operation between the universities and the industry.

This development was analysed in terms of institutional change. At the beginning of the period the Swedish research system is quite heavy regulated. In the middle there is a tendency to loosen up the regulation, but at the end there is slight tendency to regulate again. When these institutional changes are interpreted in terms of knowledge production it becomes clear that de-regulation favours Mode 2 knowledge production. However, de-regulation is not solely sufficient for change - it also needs interconnectivity between the state, the university and the industry. When this dynamics disappears the preconditions of knowledge production get more regulated and policy favours Mode 1 knowledge production.

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SWEDISH RESEARCH POLICY

1980–1990

This chapter analyses the Swedish Research policy with a focus on the presumed trends towards a mode 2 knowledge production. The outline of the chapter follows the model constructed in chapter two. There are mainly three aspects of mode 2 knowledge production that will be studied. First there is the Research policy aspect. The main questions are How have the Swedish Research policy developed during the 1980's? and Does Swedish Research policy shifts to Innovation policy?

The second aspect is the organisation of knowledge production. This aspect will be analysed from the questions Is there evidence of more co-operation between the state, the universities and the industry? and Is the Swedish research system organised in a more transdisciplinary manner?

Thirdly the impact of internationalisation will be investigated both from a policy and an organisational level. Using the question How does internationalisation affect the development? will make it possible to conclude if internationalisation is relevant for explaining the presumed trend towards mode 2 knowledge production.

First, however a brief historical overview of the Swedish research system 1940–1980 will be presented. The purpose of the section is to create a background for the analysis of the development during 1980's and 1990's.

4.1 SWEDISH RESEARCH SYSTEM 1940–1980

There are several ways of understanding the development of the Swedish research 1940-1980. One crucial aspect is the breakdown of the development

in periods. There are mainly three suggestions¹ and these are complementary and the differences in these periods are dependent on how detailed the development is explained. Premfors and Stevrin have fairly detailed descriptions of the development. Nybom on the other hand has a longer perspective and is mainly interested in the overall development. Having said that means that I will use the periods suggested by Nybom.² following the purpose of this section.

4.1.1 The making of the Swedish research system 1940–1950

In general a research system consists of the Governments policy and funding of research, the research councils, the universities, research institutes, the research-intensive government agencies and private business. This definition becomes “Swedish” when it is operationalised in a Swedish context and one feature of “typical Swedish” is the minimum extent of research institutes. However, the structure of the research system is not particularly Swedish. Its feature can be observed in almost every OECD-country.³

The roots of the Swedish research system can be found in the inter war years.⁴ Premfors and Nybom argue that the interwar period brought fundamental changes to the organisation of Swedish research. Nybom even argues that the ideology of science and research changes. This new ideology “Bernalism” is inspired by the physicist John Desmond Bernal and his book *The Social function of Science*. As the title suggests Science is no longer only a

¹ Prefors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur; Stevrin, Peter (1978), *Den samhällsstyrda forskningen, En samhällsorganisatorisk studie av den sektoriella forskningspolitikens framväxt och tillämpning i Sverige*, Liber förlag.

² Nybom, Thorsten (1997), *Kunskap ,Politik, Samhälle*, Arete.

³ Nybom, Thorsten (1997), *Kunskap ,Politik, Samhälle*, Arete, p 107.

⁴ Prefors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, pp 12-14; Nybom, Thorsten (1997), *Kunskap ,Politik, Samhälle*, Arete, p 34.

concern for the scientists – science is, or should be a concern for every one.⁵ This does not mean that every one should be a scientist, however it means that science should be the basis for planning and solving the problems the modern society encounters.

This ideology went well with the policies of planning and organising the society in a rational and scientific manner. The foundation of the Swedish model is to be found in the same period. Premfors argues that this development and the tripartite co-operation of the state, the trade unions and the federation of employers also mattered for development of the Swedish research system because it made it possible for the industry to initiate a government report 1940 which leads to the creation of the Technical Research Council (TFR) in 1942.⁶

Even if the TFR began focusing on applied research it gradually became a financier of basic technical research. During the years 1944-1947 several research councils were founded; the Medical Research Council (MFR) and the Council for Agriculture Sciences (JFR) in 1944 and the Council for Natural Sciences (NFR) in 1945. Both the Humanities (HFR) and Social Sciences (SFR) got their councils in 194, which later became the Council for Research in the Humanities and the Social Sciences (HSFR).

4.1.2 Consolidation of a system 1950-1965

At the beginning of the 1950's, the newly founded research councils set the guidelines of the research system. It was both applied and basic research that should be financed by the councils. Stervrin argues that only two of the councils (MFR and JFR) that were promoted by scientists. The other councils were promoted by industrial interest groups (TFR) or by politicians (NFR and

⁵ Nybom, Thorsten (1997), *Kunskap ,Politik, Sambälle*, Arete, pp 34-38.

⁶ Prefors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, pp 12-14.

SFR). Interestingly enough it was the politicians that promoted NFR and SFR with the objective to enhance basic research in their area.⁷

The making of the research councils also had policy implications – it became the way of organising Research. Having established this principle, the question of who and where research should be performed was on the agenda. There were mainly two alternatives, either research institutes that are internationally fairly common or a strong university sector. The latter was implemented as consequence of the conferences on research and higher education that was chaired by the Prime Minister Tage Erlander (Harpsund in 1954 and Rigoletto 1955). During this period the organisation of Research was institutionalised. The “Swedish way” of governing and performing Research was established.⁸ Nybom argues that this form of organisation actually was a decision of consensus; scientist, politicians and administrators all agreed on this division of labour between financiers and performers e.i. councils as a source of research funding and the universities as performers.⁹

The reason for this expansion was the belief that Research would help the development of society. The Prime Minister formed a special board of advisers on Scientific issues in 1962 (Forskningsberedningen). This board had advisors from the administration, the industry and the university sector. It had an informal role, however the expectations from some scientist were that the board should formulate the overall science policy. The development took another turn though; Research should be a part of the planning and improvement of every sector of society and not implemented via a general Research policy.

⁷ Stevrin, Peter (1978), *Den samhällsstyrda forskningen, En samhällsorganisatorisk studie av den sektoriella forskningspolitikens framväxt och tillämpning i Sverige*, Liber förlag, pp 91-92.

⁸ Nybom, Thorsten (1997), *Kunskap, Politik, Sambälle*, Arete, pp 101; Prefors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, pp 14-15; Stevrin, Peter (1978), *Den samhällsstyrda forskningen, En samhällsorganisatorisk studie av den sektoriella forskningspolitikens framväxt och tillämpning i Sverige*, Liber förlag, pp93-94.

⁹ Nybom, Thorsten (1997), *Kunskap, Politik, Sambälle*, Arete, pp 101.

4.1.3 Research as a basis for planning 1965-1980

During the mid 1960's a new principle was introduced in the Swedish research policy. The principal of "sectoral research" means that almost all sectors in society should have access to researchers in their problem solving i.e. "sectoral research" is mainly applied research. In policy terms this meant that all ministries had their own "research policy". This was organised in two ways; either via the council model or via the creation of new planning organisations such as STU (Board of Technical Development). Another feature of this principle is that the universities were the performer of both basic research and "sectoral research".¹⁰

This development did not mean that that basic research was dismantled. An OECD report in 1971 (the so-called Brooks report) argued that research should be integrated in all policy areas and be a foundation for social and economic development in society. The report states that there should be a blend of applied and basic research. The objective for Research policy was then to facilitate both basic research and applied research. The social democratic government incorporated this advice in their ideology of Research.¹¹

Following Nybom, the development of "sectoral research" has been explained by a number of researchers. Nybom suggest two arguments, which are developed from elder explanations. Firstly, there is the argument of the long rule of the Swedish Social democracy. This explanation refers the development to making of Social Democratic state and the development of "sectoral research" is a function of the state that plans and intervenes in all

¹⁰ Stevrin, Peter (1978), *Den samhällsstyrda forskningen, En samhällsorganisatorisk studie av den sektoriella forskningspolitikens framväxt och tillämpning i Sverige*, Liber förlag, pp 137-157.

¹¹ Stevrin, Peter (1978), *Den samhällsstyrda forskningen, En samhällsorganisatorisk studie av den sektoriella forskningspolitikens framväxt och tillämpning i Sverige*, Liber förlag, pp 166-168.

sectors of society. In other words “sectoral research” is merely a consequence of the welfare state. Secondly the argument of structural change is at hand. This means that the development is on a societal or global level and therefore explained by changes on this level. A national system may be a bit different than other, however these differences are just small adjustments in the overall structure. When these two explanations are combined a comprehensive understanding of development is possible.¹²

Another way of understanding this development would be that this development could be explained by using the theory of knowledge production presented by Gibbons et al. The development on a policy level can be described in terms of Research policy during the year's 1940- 1965. The latter period has a clear dominance of a Policy for Science. Gibbons et al. also argue that there are no exclusion, the different approaches is implemented at the same time, however with one dominating. That seems to be the case for Sweden.

The international impact is also evident both ideological and on the policy level. “Bernalism” as an ideological inspiration to commence the work of building a research system and later OECD as source for policy advise. These influences also are used for addressing different problem. The Bernalism is used to answer the question “why” and the OECD influences are used to answer the question “how”.

These two factors does not necessary prove Gibbons et al. right. Their theory also needs the organisational side of research. This means that the performer side of the research system also affects the Modes of knowledge production. This means that you should investigate the question how Research is organised and who actually are involved in producing knowledge. This perspective makes possible to explain the development of research system

¹² Nybom, Thorsten (1997), *Kunskap, Politik, Samhälle*, Arete, pp 105-120.

from a bottom – up perspective or at least analysing the interdependency between the different levels. The perspectives on knowledge production that Gibbons et.al have suggested will be investigated in the following.

4.2 CO-OPERATION ON THE AGENDA 1980–1985

During 1970's the Swedish research system was thoroughly investigated. Almost all aspects of the Swedish Research system were analysed. The concluding report "Forskningspolitik" (Research Policy) was presented to government in 1977.¹³ This report, seconded by others became the basis for the government's bill "Om vissa frågor rörande forskning och forskarutbildning" (On research and research training) 1978/79.¹⁴

The Research bill of 78/79 had its main interest in Research, Research training and Planning of research. Premfors argues that this bill mostly contains summaries of the reports and does not make any make any comprehensive policy recommendations.¹⁵ There were however some interesting principles that this bill suggested. First, it stated that government should in every terms of office give an overall bill on Research. Secondly the principle of "Sectoral Research" was officially pronounced and thirdly, that the universities should be the performer of government sponsored research whether it was basic or sectoral.¹⁶

In addition to this and maybe because of the nature of the bill of 1978/79 the government suggested that more information on Swedish research was required to give a comprehensive bill. Hence, other aspects of research were to be analysed and new reports were to be written. One of the explicitly

¹³ *Forskningspolitik. Betänkande av forskningsrådsutredningen* (SOU 1977:52). Gotab, Stockholm 1977.

¹⁴ Regeringens proposition 1978/79:119.

¹⁵ Prefors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, p 34.

¹⁶ Prefors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, pp. 34- 36; Regeringens proposition 1978/79:119, pp. 12-26; Landberg, Hans, Edqvist, Olle, Svedin, Uno (1995) *Riksdagen, Regeringen och Forskningen, Några drag i svensk forskningspolitik* (SOU 1995:121), Fritzes förlag, p 37.

named fields that were needed to be investigated was the co-operation between the State, the University and the Industry.¹⁷

4.2.1 The FOSAM-committee¹⁸

In 1978 the Swedish Minister of Education wrote the instructions to the committee that were to investigate co-operation in the Swedish research system. The starting point was to analyse mission-oriented research, mainly costs and staff issues. That was to be done by analysing new forms of research co-operation, part-time professor and Liaison researchers. Finally the committee should analyse the Institute for Social research.¹⁹

Research co-operation was defined by the committee as any form of co-operation between departments and scientists at the universities and other organisation such as government agencies, business and research councils. However, co-operation must mean that funds are transferred to the universities. The committee did not analyse basic research at the universities. The committee distinguished between “sectoral research” and industrial research. The difference is mainly that government bodies finance ”sectoral research” and private companies finance industrial research.²⁰

Given that definition of research co-operation, the public Swedish research system was defined by financers and performers of research. Were co-operation was defined as being the nature of relation between financers and performers of research with exception of the funding the universities get directly from the state (Faculty funding for basic research). The system is

¹⁷ Regeringens proposition 1978/79:119, om vissa frågor rörande forskning och forskarutbildning; Direktiv 1978:21, Utbildningsdepartementet (SOU:1980:46, pp 237-243).

¹⁸ *Högskolan i FoU-samverkan, Betänkande av forsknings-samverkanskommittén (FOSAM)*, SOU 1980:4, Gotab Stockholm 1980.

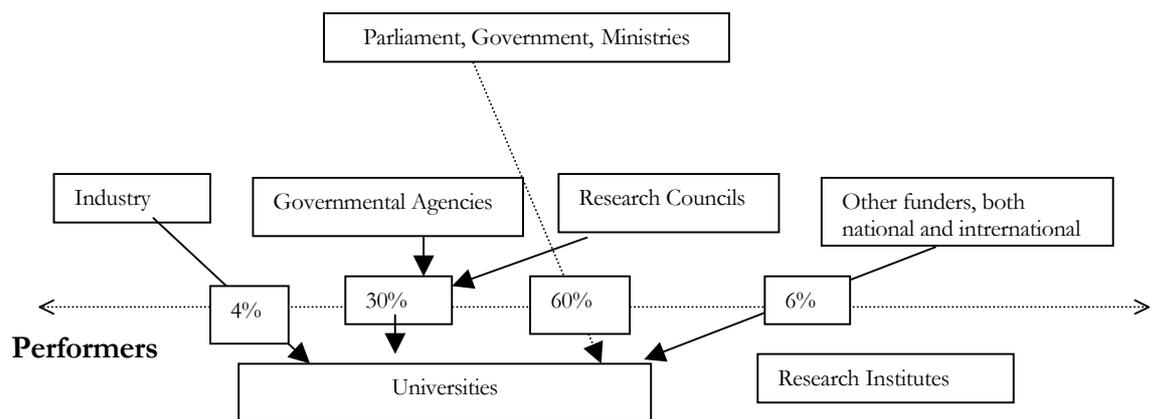
¹⁹ Direktiv 1978:21, Utbildningsdepartementet (SOU:1980:46, pp 237-243).

²⁰ *Högskolan i FoU-samverkan, Betänkande av forsknings-samverkanskommittén (FOSAM)*, SOU 1980:4, Gotab Stockholm 1980, pp 23-27.

summarised in figure 1. The full arrows define the parts of the Swedish research system investigated by FOSAM.

FIGURE 1. THE SWEDISH RESEARCH SYSTEM BY FINANCERS AND PERFORMERS 1980.

Financers



Note: The numbers express the relative expenditure by financers at the Swedish university sector in 1980. SCB (1996), *Vetenskaps- och teknologindikatorer i Sverige 1996*, Statistiska centralbyrån, p 84, graph 4.20.

The FOSAM-committee produced three sub-reports, one on the social research institute, one concerning part-time professors and finally a report on liaison researchers.²¹ The report on the Social research institute is of minor interest for this study, because it does not explicitly concern co-operation. Therefore the focus will be on the two latter reports and the main report. Interestingly enough the main report does not include the findings from the investigation of liaison researchers.

4.2.1.1 Part-time Professors

The report on part-time professors is an evaluation of a government initiative in 1973. The idea was that researchers from the industry and government

²¹ *Ett institut för social- och arbetsmarknadspolitisk forskning*, DsU 1979:4; *Adjungerade professorer*, DsU 1979:13. and *Kontaktforskare*, DsU 1981:24.

agencies should be able to work as part-time professors at the universities. The part-time professors mission was to initiate new research and contribute both to research and research training with their experience. The part-time professor was to work at the university one day per week during three years. This arrangement was financed by the government and the industry.²²

During the evaluated period 1973-1979, 50 part-time professorships were awarded. They were spread to nine universities and the faculties of pharmaceuticals, science, medicine, technology and social sciences. Out of these 50 part-time professors Karolinska Institute (KI) had five (medicine), Royal Institute of Technology (KTH) had 11 (technology) and Chalmers Institute of Technology (CTH) had eight (technology).²³

The evaluation's main result was that the initiative with part-time professors was quite successful. There were only minor complaints from participants. Since the initiative only concerned 50 individuals and did not have the character of a system, the FOSAM-committee argued that there could be no general conclusions drawn from this report.²⁴

However, the FOSAM-committee made some suggestions. Firstly there is the question of the initiative's impact among the participants (the company/governmental agency, the university and the researchers). They all agreed that this opportunity had a positive impact on the research both qualitatively and quantitatively. In addition, a part-time professor brings prestige and thereby also more international contacts. However, The committee found some problems. The most important was that university research is organised in disciplines. The organisation of research could benefit more from the part-

²² *Adjungerade professorer*, DsU 1979:13, pp 19-20.

²³ *Adjungerade professorer*, DsU 1979:13, p 23.

²⁴ *Adjungerade professorer*, DsU 1979:13, p 61.

time professors if there were more of interdisciplinary research. Finally the committee argues that the financial situation is poor.²⁵

4.2.1.2 *Liaison Researchers*

The initiative of Liaison researchers was given in the budget bill of 1977/79. The purpose was to give small and middle size enterprises (SME's) and government agencies the possibility to use researcher from universities in their ordinary operations. The terms for the SME's were very generous. They could use a researcher up to a year for free and the salaries would be paid by a special government grant.²⁶

The Liaison researchers should together with ordinary staff find and solve problems at the agencies and SME's. The main purpose was to conduct applied research or even more correct, to do development work. The initiative was organised as projects in cities with a university (Uppsala, Lund, Göteborg and Umeå). During the four years there were a total of 79 projects that were implemented and finished. A total of 97 researchers from the universities took part in these projects.²⁷

The main result of this initiative was that its objectives were met. Hence, researchers could together with the enterprises/agencies personally solve the problems faced. Which that means researchers is important in problem solving, even for SME:s.²⁸ In addition, the project-form is mainly good but it needs an extra organisational body that can find projects for co-operation. The committee argues that the problems with this initiative are fairly the same as the ones with part-time professors. However, this initiative has a specific

²⁵ *Adjungerade professorer*, DsU 1979:13, p 61-67.

²⁶ *Kontaktforskare*, DsU 1981:24, p 13.

²⁷ *Kontaktforskare*, DsU 1981:24, p 35-50.

²⁸ *Kontaktforskare*, DsU 1981:24, p 97.

problem i.e. that the university researchers are scarce and usually have trouble finding the time for participation.²⁹

4.2.1.3 *The FOSAM-report*

The FOSAM-report was finished in 1980. The main suggestions included a system for research co-operation. The committee however starts with recognising the major problem – the balance between “sectoral research” and basic research at the universities. Hence, the starting point of the report was according to the committee to analyse and understand the balance problem. The report frankly states that “sectoral” and industrial research never should hinder the universities traditional research. The solution to this problem was to give the universities more funding on a permanent basis in order to meet the increased volume of “sectoral research”. This increased funding should result in permanent staffs that fulfil the needs for “sectoral research”.³⁰

These suggestions were followed by recommendations on implementation. Given that the universities got more funds for “sectoral research”, a planning process should start were the governmental agencies and the universities consider “sectoral research” in their ordinary planning. The basis for this planning is that government agencies should be forced by law to use the universities as research performers.³¹

The report continued with it proposals for industrial research, which should be organised and implemented in the same way as “sectoral research”. The report suggests that an investigation of a “research tax” should be carried out. This tax could finance the industrial research at the universities. The

²⁹ *Kontaktforskare*, DsU 1981:24, pp 103-107.

³⁰ *Högskolan i FoU-samverkan, Betänkande av forskningsamverkanskommittén (FOSAM)*, SOU 1980:4, Gotab Stockholm 1980, pp 12-14.

³¹ *Högskolan i FoU-samverkan, Betänkande av forskningsamverkanskommittén (FOSAM)*, SOU 1980:4, Gotab Stockholm 1980, pp 224-226.

alternative was that appropriations in relation to the volume of the industrial research should be given to the universities.³²

Finally the report suggested the creation of a special organisation, either inside the universities or closely connected to it, however separate from the university. This organisation should serve both sectoral and industrial research. This solution is internationally a common way of solving similar problems. The exemplary model is SINTEF (Selskapet fo industriel og tekniskforskning) in Norway. If SINTEF should serve as a model, the special organisation should be outside the university, but closely connected in order to assure that the university, the industry and government agencies get an equal amount of influence.³³

4.2.2 The Discussion³⁴

The FOSAM –report was published 1980 and was distributed to several agencies, interest groups and universities. The discussion of the suggestions from the report was then handed in to the government that makes its suggestion in the next Research policy bill on the basis of both the report and the views of the discussants. In the following a selection of universities and interests groups will be studied.

4.2.2.1 The Universities

The Royal Institute of Technology (KTH) agrees with the report that most important issue is the balance problem. Letting the universities have more

³² *Högskolan i FoU-samverkan, Betänkande av forskningsamverkanskommittén (FOSAM), SOU 1980:4, Gotab Stockholm 1980, p 15.*

³³ *Högskolan i FoU-samverkan, Betänkande av forskningsamverkanskommittén (FOSAM), SOU 1980:4, Gotab Stockholm 1980, p 19 and 195-209.*

³⁴ The word discussion is used to describe the ”Remisrunda” which has the same purpose as a hearing. The main different is that ”remissrundan” is a written discussion of reports.

autonomy can solve this problem and that “sectoral research” shifts focus to long term finance of research.³⁵

The planning aspects should be an issue for the university and not regulated on a government level. It should be the department where the research is performed that should decide whether to accept or reject research proposals. Hence the suggestion that universities should perform sectoral research by law is firmly rejected.³⁶

KTH supports the view that special organisations should be allowed at universities. The organisation could solve the problem of both “sectoral research” and industrial research at the universities. It is important that this organisation is independent because it should not be restricted to the working conditions (salaries etc) at public institutions. KTH also favours part-time professors and argues that they should be permanent part of the universities. Finally KTH thinks that liaison researchers are a bad idea since the special organisation will solve these problems.³⁷

Chalmers Institute of Technology (CTH) shares the views of KTH. However, in some areas CTH is a bit more positive. This is especially true for liaison researchers that CTH argues should be permanent i.e. that a researcher could have part time duties in a company or at an agency.³⁸

³⁵ Rektorsämbetet KTH, Yttrande 1981-05-12, Högskolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 3, p 1 and 6.

³⁶ Rektorsämbetet KTH, Yttrande 1981-05-12, Högskolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 3, p 3-4.

³⁷ Rektorsämbetet KTH, Yttrande 1981-05-12, Högskolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 3, p 7 and 10-11.

³⁸ Chalmers, Tekniska Högskola, Yttrande 1981-06-11, Högskolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 3, p 13.

Karolinska Institute (KI) starts their discussion on the special condition for medical research. For KI it is natural to engage them selves in their sector, medical services. Hence, there is not much of a balance problem. However, KI does not recognize the necessity of legislation. KI support the FOSAM suggestion that part-time professors should be a natural part of university. Finally KI want the government to investigate conditions of clinical testing of new drugs. Were the university so far has not been involved.³⁹

4.2.2.2 *The industrial interests groups*

The Royal Swedish Academy of Engineering Sciences (IVA) starts their remark on the report by addressing the balance problem. IVA thinks that this problem is a bit overstated – in the technical sciences this “problem” is not all evident because technical research has an element of both applied and basic research. Due to this fact it should be possible for industrial researchers to have an influence on basic research at the technical universities.⁴⁰

IVA continue their argument with a rejection of the suggested legislation and the FOSAM confidence in planning of research. IVA also strongly rejects the proposal for a special “research tax” on research for the industry. On the more favourable side is the suggestion of part-time professors and liaison researchers, which IVA believes, are good suggestions.⁴¹

The comments on the FOSAM-report from the Swedish Employers’ Confederation (SAF) and the Federation of Swedish Industries (SI) are very similar. Therefore they will be treated simultaneous in this case. On the

³⁹ Karolinska Institutet Konsistoriet, Yttrande 1981-06-16, Högskolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 3, pp 1-4.

⁴⁰ Ingenjörsvetenskapsakademin, Yttrande 1981-09-30, Högskolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 2, pp 1-2.

⁴¹ Ingenjörsvetenskapsakademin, Yttrande 1981-09-30, Högskolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 2, pp 3-4.

balance problem they believe that it can be problematic if it is not properly handled. It should be handled on the government level, for instance in the reoccurring research policies.⁴²

As IVA did, both SAF and SI reject the suggested “research tax” and are in favour of making both part-time professors and liaison researchers permanent. SAF and SI are also in favour the special organisation of research co-operation at the universities⁴³

The Swedish Association of the Pharmaceutical Industry (LIF) is quite positive to the FOSAM – report. They argue that co-operation should increase, however not necessary by law. LIF is also very positive to make part-time professors and Liaison researchers a permanent element at the universities. LIF also support KI’s view on clinical trials of pharmaceuticals. As in the pre clinical trails the universities should be involved in the clinical trails and thereby be able to follow the process of pharmaceutical tests.⁴⁴

4.2.3 The Research Policy bill of 1981/82

In an overall perspective Premfors argues that this bill was in large parts “unfinished”. This means that quite a few areas of research were not represented, for instance energy and industrial research. Another critic was

⁴² Sveriges Industriförbund, Yttrande 1981-10-07, Högsolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 2, pp 1-2; Svenska Arbetsgivareföreningen, Yttrande 1981-10-08, Högsolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 2, pp 1-2.

⁴³ Sveriges Industriförbund, Yttrande 1981-10-07, Högsolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 2, pp 2-4; Svenska Arbetsgivareföreningen, Yttrande 1981-10-08, Högsolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 2, pp 2-4.

⁴⁴ Läkemedelsindustriföreningen, Yttrande 1981-09-29, Högsolan i FoU-samverkan, Regeringskansliet, Utbildningsdepartementet, Huvudarkivet, Regeringsakter, Underserie A, 1982 18 FEBR, 10 del 2, pp 1-2.

that it was not co-ordinated between the government's different ministries.⁴⁵ Despite of that, it is evident that the main issues in this bill were the prioritised areas of research that the research councils had produced as one of the bases for the bill. The other base was the FOSAM-report.⁴⁶

The prioritised areas of research from the government were research in new technology, social and health issues, ecology, social sciences and humanities. These areas are "prioritised" in the way that every council has its own share.⁴⁷ This and the fact that the research councils "planning" of research is the most important issue in the research policy suggest that government did not plan to make radical adjustments in organisation of research.

FOSAM's main issue was the balance problem, with solution of an overall research planning. The government favours this idea, however not by legalisation, but with an extensive planning order to all government agencies and universities. This is later regulated in the government's commission to universities and agencies.⁴⁸ An important issue here is that this only concerns government agencies and not the industry. What the government suggest is planning for "sectoral research", not research co-operation in the FOSAM definition, which includes all types of co-operation.

The implementation of the planning process has been thoroughly analysed by Premfors. The result of this should be the grounds for next research bill. The process contained in summary four steps. First, the government agencies investigated their need of research. Secondly the UHÄ (National Swedish board of Universities and Colleges) collected this information and transformed it to suitable missions for the universities. The universities then

⁴⁵ Premfors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, p 38.

⁴⁶ Regeringens proposition 1981/82:106, pp 1-2. See also Premfors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, p 39.

⁴⁷ Regeringens proposition 1981/82:106, pp 1-2 and 44-37.

⁴⁸ Regeringens proposition 1981/82:106, p 70.

analysed and try to fit the needs into their planning of research. Finally The UHÄ got the planning back from the universities and compiled it to the government. This process was all about - in paraphrasing Premfors – fitting sectoral research needs with the disciplines at the university.⁴⁹

On the issues of part-time professors and Liaison researchers the government are in favour of making these features permanent at universities. Concerning the part-time professor the government fully favours the suggestion by FOSAM. The “experiment” with Liaison researchers was in need some adjustments according to the bill. Liaison researchers should also be a permanent feature of the university. Therefore it should be the universities themselves that arranged and administrated this activity. To finance the Liaison researchers, 1.3 million Swedish crones were appointed as to no special financing for part-time professors.⁵⁰

The bill of 1981/82 was also in favour of the suggestion of the possibility to create special organisations to promote research co-operation. This possibility should be used by caution by the universities and the government should be consulted whenever such an organisation was to be created.⁵¹

The international issues of research are not considered for policy uses in the bill of 1981/82. There is however an appendix with a quite substantial discussion of internationalisation and a comparative study of the Swedish research system. There are mainly three reasons for international co-operation according to the bill. The first reason is the cost of big science. Co-operation at for instance CERN (European Organisation of Nuclear Research) and with ESA (European Space Agency) makes it possible for a small country like Sweden to have this kind of research but not to bear all the costs. Secondly,

⁴⁹ Prefors, Rune (1986), *Svensk forskningspolitik*, Studentlitteratur, pp 45-74.

⁵⁰ Regeringens proposition 1981/82:106, pp 88-91.

⁵¹ Regeringens proposition 1981/82:106, pp 85-88.

internationalisation can provide a greater width of research fields than a small county with limited resources. The third motive is that the Swedish economy is internationally dependent and it needs international research co-operation to keep up with her main trading partners.⁵²

Interdisciplinary research is addressed as being important for solving many of societies problems. The problems are often complex and needs co-operation between disciplines. In Sweden FRN (Council for Planning and Coordination of Research) formed in 1977 have a special responsibility; in addition the TEMA-Institute at Linköping University is the most successful attempt in organising research interdisciplinary.

These initiatives can also be described in term of appropriations. In table 1 the government direct appropriations to universities is accounted for. Interdisciplinary research has a very small share of total government appropriations on university R&D. Data on the other investigated areas are not available.

Table 1. Government appropriations on university R&D⁵³ 1981/82, million SEK current prices.

| Year | Co-operation | Internationalisation | Interdisciplinary | Total |
|---------|--------------|----------------------|-------------------|-------|
| 1981/82 | n.a | n.a | 7,5 | 1 414 |

Note: Interdisciplinary research is government's appropriations on TEMA-research, which probably is an underestimation of means to interdisciplinary research.

Source: Regeringens proposition 1981/82:106, p 51.

⁵² Regeringens proposition 1981/82:106, pp 245-247.

⁵³ The term government appropriations on university R&D is the budget post General Scientific development (Budgetposten, Allmän vetenskaplig utveckling)

4.2.4 The Research Policy bill of 1983/84

In accordance with the decision in 1977 the research bills were to be presented with a three-year interval. The two-year difference between this Research policy bill and the one before is due to the fact that there was a shift in government in 1982. The election was won by social democrats that formed a minority government.

The main statement in this policy is that the long-term priorities of the research councils in the bill in 1981/82 will be implemented during the period 1983- 86. This also means that basic research and the long-term “sectoral research” will be prioritised. Another issue is that the government will deal with the working conditions and recruitment of young researchers. The government further prioritises the issues on the co-operation between the universities and the industry and suggest measures to increase the international exchange of scientists.⁵⁴

The government explicitly emphasise that co-operation between the universities and the industry should increase. Ingvar Karlsson, the deputy prime minister argues:

”My own opinion is that there are no doubts that the co-operation between the research that is financed by government and are pursued at the universities, in other organisations and in the industrial sector is crucial to the society.”⁵⁵ (My translation)

The minister continues by praising the work that has been done at the universities since the bill of 1982. There has been a lot of special organisations created at universities, for instance several Science parks. Maybe the most inspiring example of this is the CTH initiative to create a foundation to

⁵⁴ Regeringens proposition 1983/84:107, pp 1-2.

⁵⁵ Regeringens proposition 1983/84:107, p 22 Min egen uppfattning är att en samverkan mellan den forskning som finansieras med statliga medel och bedrivs vid högskolor eller andra organ och näringslivet otvivelaktigt är till fördel för samhället

handle industrial assignment. The industry has sponsored several new part-time professors and some companies have even put large-scale research programs at the universities. This is especially true for the pharmaceutical industry.⁵⁶

The reason for this that the industry is becoming more dependent both on the research done at the universities and the more the dependent on university trained co-workers. The minister continues his argument by give examples from the international arena and puts the Swedish development in an international context. The international development should be an important source of inspiration, especially the US development, where industry finances basic research.⁵⁷ Even though the development of co-operation has been very successful the government finds it necessary to investigate this development more closely and it should be done before next bill, which is planned in 1987.

The internationalisation of science is also a big issue and the work done so far is praised. The minister starts his arguments on internationalisation of Swedish research by using other countries development as an inspiration. Internationalisation is important both for industrial competitiveness and prioritised research areas.⁵⁸ The point his making is:

“We must be a part of the international development and thereby gain new knowledge in order to renew our industry and society”.⁵⁹ (My translation)

One of the main tasks of internationalisation is that the negotiation with the European Union on research co-operation will continue. The suggestion for

⁵⁶ Regeringens proposition 1983/84:107, p 21.

⁵⁷ Regeringens proposition 1983/84:107, p 22.

⁵⁸ Regeringens proposition 1983/84:107, p 24.

⁵⁹ Regeringens proposition 1983/84:107, p 24. “För förnyelsen såväl inom industrin som inom andra samhällsområden måste vi delta i det internationella kunskapsutbytet och tillgodogöra oss nya kunskaper som tagits fram också i andra länder”

the universities is that younger researchers should get more opportunities to go abroad and that the government will to a larger extent finance guest researchers. The final venture on internationalisation is that STU will get extra funding for a program of international research exchange.⁶⁰

In table 2 the government appropriations on university research are accounted for. This numbers should be interpreted with caution. As in the bill of 1981/82 the appropriation interdisciplinary research is still a very small part. Though the appropriations on internationalisation is about 6% of total.

Table 2. Government appropriations on university R&D 1983/84, million SEK current prices.

| Year | Co-operation | Internationalisation | Interdisciplinary | Total |
|---------|--------------|----------------------|-------------------|-------|
| 1983/84 | n.a | 158 | 16 | 2 525 |

Note: Interdisciplinary research is government's appropriations on TEMA-research, which probably is an underestimation of means to interdisciplinary research.

Source: Regeringens proposition 1983/84:107, bilaga 5, p 68.

4.3 BACK TO BASICS 1986-1990?

The early 1980's brought a lot of changes in the research system concerning possibilities of co-operation; the main issue was the balance problem of "sectoral" and basic research. However, the work on the issues of co-operation and internationalisation continues. There are two reports of interests during the period 1986-1990. The first one is the OECD -audit "Reviews of national science and technology policy" and the second one is the FRN (Council for Planning and Coordination of Research) report "Högskolan och Näringslivet: Roller, Möjligheter, Målkonflikter" that was

⁶⁰ Regeringens proposition 1983/84:107, p 26.

ordered in the bill of 1983/84. In 1989 the special organisations at the universities were evaluated in the report “Stiftelser för samverkan”.

The OECD- and FRN-reports were not discussed in the traditional manner instead the government used hearings. These hearings have not been documented.⁶¹ It is therefore not possible to know the views held by the studied universities and interest groups. Methodologically this means that important information goes missing and it might affect the results.

4.3.1 The FRN-report

As described above the FRN report was not an ordinary government report. This mean among other things the aim of the is not principally to suggest changes in the system instead FRN understands it's mission to give the government an overview of the developments during the 1980's.⁶²

The report mainly describes the different forms of co-operation that been developed during 1980' (some of them has been described above in this chapter). The major problem with the report is that is hard to know to what extent these form exists, in several cases FRN only states that the form probably is not that common.

There are three types of services that the universities do. First, there is commissioned research i.e. that the universities provide research in a business like manner. Secondly, there is consulting which is every thing from phone calls to being hired by a company as a consultant. Thirdly there is

⁶¹ At the end of the OECD report there is an account of the discussion. It is not especially useful since it is short and only deals with overall problems and do not give any further guidance. See OECD (1987), *Review of National Science and Technology Policy*, SWEDEN, pp 90-109.

⁶² FRN (1986), *Högskolan och Näringslivet, Roller, Möjligheter, Målkonflikter*, Rapport 86:1, p 3.

commissioned education, which has had a dramatic development and is most common at smaller colleges.⁶³

“Collective research” is a form of a tri-partite collaboration between the universities (most technical) and STU (National Board for Technical Development) and the industry. The research is organised in institutes often close to a technical university. Another form of co-operation is the newly established Science parks. The universities, local authorities and local business often finance them. Many of them have been built with inspiration from the US or England. The mission for a science park varies, however its most common mission is to harbour newly established companies created by researchers at the university.⁶⁴

The report's mission was not to give explicit policy advice, however the report ends with a discussion of three problems that need to be addressed by government. The most important issue is sideline consulting. This can damage the reputation of the university and thereby the public confidence in the scientific community. To avoid this problem FRN suggests that there should be public “lists” of the sideline consulting that is done at each university.⁶⁵

The second issue is secrecy that is sometimes needed when working in a company. Secrecy is not common at the university; in fact the hallmark of the universities is openness. Secrecy might thus cause problems and the recommendation FRN makes is that doctoral work should always be public.⁶⁶

⁶³ FRN (1986), *Högskolan och Näringslivet, Roller, Möjligheter, Målkonflikter*, Rapport 86:1, p 32-25 and 32-24.

⁶⁴ FRN (1986), *Högskolan och Näringslivet, Roller, Möjligheter, Målkonflikter*, Rapport 86:1, p 28-31.

⁶⁵ FRN (1986), *Högskolan och Näringslivet, Roller, Möjligheter, Målkonflikter*, Rapport 86:1, p 52-55.

⁶⁶ FRN (1986), *Högskolan och Näringslivet, Roller, Möjligheter, Målkonflikter*, Rapport 86:1, p 55-56.

Foundations and companies owned by the universities (referred to before as special organisations) have grown dramatic and FRN find it doubtful that all of them can be useful. The recommendation FRN makes is that the activities of the foundation and the companies should be described in the annual reports of the universities.⁶⁷

4.3.1 The OECD audit

The general judgement of the OECD audit is that Swedish science policy works well. This is expressed as “...Sweden has more to teach than learn, ...”⁶⁸ There are seven areas that are explicit investigated: Balance between sectoral and basic research, quality in R&D, recruitment of young researchers, working conditions of researchers, co-operation between industry and public sector research activities, international contacts and allocation of priorities.⁶⁹

Co-operation between industry and public sector research activities, and international contacts are of special interest for this study. On the co-operation issues the OECD –group is very positive and describes the Swedish development as “very remarkable”. The recommendations they give are that the “ Liaison between the research councils, the academy of Engineering and STU be maintained or reinforced as needed.” The second recommendation is that the Swedish government should open up areas of excellence for venture capital. The final recommendation is that the Renewal Funds should be destined to modernise the university sector. The group even urges the Federation of industries (SI) and the unions to use the renewal funds in this way.⁷⁰

⁶⁷ FRN (1986), *Högskolan och Näringslivet, Roller, Möjligheter, Målkonflikter*, Rapport 86:1, p 56-57.

⁶⁸ OECD (1987), *Review of National Science and Technology Policy*, SWEDEN, p 69.

⁶⁹ OECD (1987), *Review of National Science and Technology Policy*, SWEDEN, p 71.

⁷⁰ OECD (1987), *Review of National Science and Technology Policy*, SWEDEN, p 82-84. The quotes p. 82 and 83.

On the issue of international contacts the group "...have no recommendations or special comments...". They stress however that the work should continue and that international contact are important especially to a country with a small but internationally dependent economy.⁷¹

4.3.4 The Research Policy bill of 1986/87

The priorities in this bill are recruitment of young researchers and some areas of basic research besides internationalisation and co-operation issues. New areas of priority are the Humanities and the Arts. In the science and technology areas the priorities from the mid 1980's are still the same i.e. environmental, information technology and biotechnology. The main reason for this is that Sweden needs high quality research in these areas to be international compatible.⁷²

The government discusses the result from the OECD-audit in brief. They are very pleased with the results. The issues that are explicitly commented are the need of flexible salaries for the university-employed researchers, the balance problem of "sectoral" and basic research and commissioned education. The government will address these problems and other recommendations when described in the bill.⁷³

The OECD-report was very positive in their judgement of the internationalisation processes of the Swedish research. The government will during this term of office even more emphasise the importance of international collaboration. The reason for this is:

⁷¹ OECD (1987), *Review of National Science and Technology Policy*, SWEDEN, p 85.

⁷² Regeringens proposition 1986/87:80, pp 6-7.

⁷³ Regeringens proposition 1986/87:80, pp 18-20.

“Much of a small country’s strength lays in its international co-operation. The best results of Swedish research has over the decades been tried and developed in competition and co-operation with institutions in other countries.”⁷⁴ (My translation)

At the universities this means that the government will increase the faculty appropriations for research and postgraduate education. One of the objectives is to enhance international collaboration, especially for young researchers. The government also has the intention to continue the formalised co-operation at CERN and other international research organisations.⁷⁵

There are also special initiatives at the European level. The main issues are the EC frame-program and the EUREKA project. The EC frame program is of great interest for Sweden, however participation is limited because the EC is restrictive with countries outside the common market. The main Swedish focus is on the EUREKA project (a French all European initiative), which is mainly supporting applied industrial projects. In order to participate thoroughly the government suggest a tri-part co-operation were state through STU and the public investment group Industrifonden (Industrial fund) together with the industry will finance research performed by companies and university researchers in Europe.⁷⁶

The FRN report is commented briefly. The government is in favour of all suggestion made by FRN. On the issue of special organisations the government agrees that as special government sanction for creating for instance a foundation for research collaboration is not entirely necessary

⁷⁴ Regeringens proposition 1986/87:80, pp 10. “Mycket av styrkan i ett litet lands forskning ligger [...] i dess internationella samhörighet. Det bästa av vad svensk forskning åstadkommit har genom decennierna prövats och utvecklats i en ständig växelverkan och konkurrens med institutioner i andra länder.”

⁷⁵ Regeringens proposition 1986/87:80, pp 13-14.

⁷⁶ Regeringens proposition 1986/87:80, pp 15-16.

however a special investigation of the forms of special organisation will be done during the terms of office.⁷⁷

On co-operation in general and “the division of labour” between the state and the industry the Prime minister states that:

“The division of labour between the state and the industry concerning research has long been clear. It is the government’s responsibility to finance basic research and research training; meanwhile it is the industries responsibility to do research near the market. Both parties agree on this division of labour.”⁷⁸

Further on in the same section, the prime minister argues that it is important with co-operation between the universities and the industry, however it is important that “the division of labour” is maintained.⁷⁹

Interdisciplinary research is not a policy issue in this bill, which means that there are no special government initiatives. Nevertheless it used as an argument for quality of research and in describing innovative research. The most innovative research in biotechnology is done at an institute at Uppsala university where the interdisciplinary approach is salient. The quality issue is implicit, however it is important:

“To me it is evident that the creation of interdisciplinary research at the universities will be crucial to the industrial development. At the same time I would like to stress that the effort during the last years at getting ‘back to basics’ not any way contradicts the creation of interdisciplinary research.”⁸⁰

⁷⁷ Regeringens proposition 1986/87:80, bilaga 6, pp 43-45.

⁷⁸ Regeringens proposition 1986/87:80, p 29. “Rollfördelning mellan stat och näringsliv vad gäller forskningen har sedan många år varit klar. Det är statens ansvar att svara för anslag till den grundläggande forskningen och forskarutbildningen, medan det är företagens ansvar att bedriva egen FoU-verksamhet när marknaden. Om denna rollfördelning råder det enighet.”

⁷⁹ Regeringens proposition 1986/87:80, pp 31.

⁸⁰ Regeringens proposition 1986/87:80, p 30. ”Det är mitt bestämda intryck att förmågan att skapa tvärvetenskapliga kombinationer vid universiteten kommer att ha stor betydelse för vår industriella

These statements on interdisciplinary research are neither backed with more appropriations (table 3). However there is quite an increase in total appropriations on university R&D compared with the bill of 1983/84. This is however not reflected in real terms (see graph 6, chapter 3.).

Table 3. Government appropriations on university R&D 1986/87, million SEK current prices.

| Year | Co-operation | Internationalisation | Interdisciplinary | Total |
|---------|--------------|----------------------|-------------------|-------|
| 1986/87 | n.a | n.a. | 18 | 4 894 |

Note: Interdisciplinary research is government's appropriations on TEMA-research, which probably is an underestimation of means to interdisciplinary research.

Source: Regeringens proposition 1986/87:80, p 26, bilaga 6 p 110.

4.3.4 The Research Policy bill of 1989/90

According to the bill of 1986/87 the special organisations at universities were to be investigated. It was, in the government report "Stiftelser för samverkan" the issue was investigated mostly from legal perspective i.e. details on how regulate the relationship between foundations and universities.⁸¹ The character of this report makes it of lesser interest for this study and is therefore not in debt discussed.

The main issue in this bill is basic research. Already in the introductory remark this is clear:

"The government support for research and development should concern basic research. This is also the priority of this bill".⁸²

framtid. Jag vill samtidigt betona att den strävan som funnits under senare år och som uttrycks som 'back to basics' på intet sätt står i motsats till tvärvetenskap."

⁸¹ *Stiftelser för samverkan* (SOU 1989:50.) Stockholm 1989.

⁸² Regeringens proposition 1989/90:80, p 1."Statens stöd till forskning och utveckling bör i första hand avse grundläggande forskning. Insatser för denna utgör också tyngdpunkten i denna proposition."

At the universities this meant a substantial increase in the faculty appropriations for research and postgraduate education. The government also created two new research councils TFR (Teknikvetenskapliga forskningsrådet, Technical research Council) that can be seen as a re-creation of the first research council. The reason for a new technical research council is that basic technical research has had a financial drawback compared to applied research. The second is SFR (Social forskningsrådet, Social Research Council).⁸³

The bill also prioritises international collaboration in the sense that the priorities of the former bill are maintained. In this bill the focus is however of co-operation with the EC. The formal base for this, is the agreement between Sweden and the EC of 1986 on Research and Development. The reason for agreement with in the EC is that any nation has to small resources to invest in research that leads to industrial innovation. The second reason is that the Swedish industry has been successful in “importing” and developing new technology.⁸⁴

The issue of special organisations is discussed. In this policy the government decides that the universities has to have government sanction to create foundation etc. The Higher Education Act will be changed in accordance. The reason for this that the government is in favour of an increased co-operation between the universities and industry, however the co-operation should take place within the university’s ordinary organisation.⁸⁵

As the in all the research bills during the 1980’s, the bill of 1989/90 does not give co-operation any special appropriations (table 4). The policy statement on internationalisation is backed with might seem like a large increase

⁸³ Regeringens proposition 1989/90:80, p 2, 37 and table 1 p 10.

⁸⁴ Regeringens proposition 1989/90:80, p 22.

⁸⁵ Regeringens proposition 1989/90:80, p 207.

compared with early the 1980s but in relative terms internationalisation is about 5% of the total university appropriations.

Table 4. Government appropriations on univeristity R&D 1989/90, million SEK current prices.

| Year | Co-operation | Internationalisation | Interdisciplinary | Total |
|---------|--------------|----------------------|-------------------|-------|
| 1989/90 | n.a | 259 | 26 | 5588 |

Note: Interdisciplinary research is government's appropriations on TEMA-research, which probably is an underestimation of means to interdisciplinary research.

Source: Regeringens proposition 1989/90:90, p 26, avdelning 17, p 232-233, 292, 321.

4.3 TOWARDS A MODE 2 OF KNOWLEDGE PRODUCTION?

The aim of this chapter has been to find evidence of a drift to a Mode 2 knowledge production in Sweden during the 1980's. I have from a short historical overview of the Swedish research system argued that knowledge is produced in Mode 1 at the start of the 1980's. I have tried to identify changes in the prerequisites of knowledge production by an investigation of the political processes surrounding the Swedish Research policy bills.

The definition of a mode 2 knowledge production in Gibbons et.al is comprehensive. Therefore I have used three main aspects of mode 2 as indicators for change; policy change, international aspects of Research policy and the organisation of research i.e. co-operation between the state, the university and the industry. Finally, I have looked for policy initiatives on interdisciplinary research.

The reason for focusing on the policy level is the aforementioned "division of labour" between the industry and the state which means that the state both

governed and financed almost all universities in Sweden - during 1980's with only one exception, Stockholm School of Economics. This fact means that the shift to a Mode 2 knowledge production would be evident in the government's bills since the government both govern and finances the Mode 1 knowledge production.

From the point of view of the theory of changing modes of knowledge production, this is a case study. Gibbons et.al wrote their theory in trying to understand the development on a global level. The objective was not to understand the development in different countries. Hence, they do not suggest explanations on the development that could be operationalised in a national context. I have suggested that this could be done from an institutional perspective.

One of the perspectives of institutional change is regulation and the process leading up to it. Since I am investigating a political governed system, the process can be investigated and analysed by using both formal and informal institutions. Informal institutions are in this study defined as suggestion from different actors in the policy process. Formal institutions are the government's tool to govern knowledge production. I have given the formal institutions two different characteristics. They can either be regulatory which means regulation by law or direct order to the universities. The institutions can also be non-regulatory i.e. they are not enforced - they give the universities opportunities.

4.4.1 Institutional change and modes of knowledge production

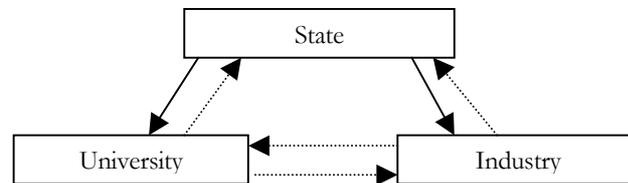
The development of the Swedish Research policy can be summarised as follows. The 1980's starts with a high level of regulation in typical Mode 1 system of knowledge production. In policy terms this means, layers of both Science policy and Policy for science with the latter as a dominant way of

organising Research. The mid 1980' s brought some changes; tendencies to of deregulation are at hand. At the end of the decade there is a tendency of a return to more regulation and to a dominance of Science policy.

There are not much of co-operation between the universities and the industry at the beginning of the period. How this should be arranged is investigated in the FOSAM-report. In the discussion of it becomes clear that both the universities and industrial interest groups have common interest of co-operation and deregulation. In the mid 1980s' it becomes evident that the suggestion from the universities and the industrial groups are formalised in the Research policy i.e. the government favours deregulation. Therefore I would argue that the policy issues of co-operation between the university and the industry are the maybe the most significant part of in Mode 2 knowledge production, especially when the outcomes are a product of inter-connectivity between the state, the university and the industry. This means that the policy level is influences by suggestions from the university and the industry.

In institutional terms this means that both informal and formal institutions matter for the development. The formal institutions are affected by the informal. For instance this is signified by fact that the deregulation suggested by the universities and the industry is also the policy. The formal institutions change from regulatory to non-regulatory i.e. the government gives the universities opportunities - co-operation is not enforced, it becomes possible. The issue of co-operation fits thus right in the triangle of institutional connectivity in a system of Mode 2 knowledge production.

Figure 2. Institutional connectivity in Mode 2 knowledge production.



Note: The dashed arrows contain informal institutions and the full arrows contains formal institutions

In the late 1980's the opportunity to affect the development by participation in a discussion of reports disappears. Then the dynamics of the interactivity cannot be at work. The FRN-report was not discussed in the usual manner, which can mean that there were none or little effect on the policy level. The investigation the Research policy bill of 1986/87 shows that this is the case, there are no policy issues in the area of cooperation. At the end of the decade the main issue is basic research and issues on co-operation can only be found implicit the government's effort in the internationalisation of research.

The international issues become more and more important during the 1980's. The government makes efforts to get internationalisation into every area of research. The arguments for this differ a bit from one Research policy to the other. However, the main argument is that international collaboration is a mean of enhancing competitiveness of Swedish research and industry.

In explaining this development it is possible to use the concepts politics and policy and one could expect that politics turn into policy with quite a linear character. This is somewhat the case of internationalisation. However, Internationalisation is not merely politics at beginning of the period, international collaboration between researchers with support from the government has been an issue since the second world war II, with the collaboration at CERN as the most obvious example.

The difference in the 1980's is that internationalisation becomes an issue, first as politics i.e. that internationalisation is important but very few if any new efforts are being implemented. During the 1980s internationalisation develops into a policy issue, but is still used as an argument for other efforts. This means that that double role of internationalisation in the theory of knowledge production by Gibbons et.al is evident in Sweden.

There is little evidence that the knowledge production is becoming more transdisciplinary on the policy level. Interdisciplinary efforts at the universities are mentioned and interdisciplinary research is recognised as something that is exiting and new. However, Gibbons et.al is making a point of differences between trans- and interdisciplinary research. (see chapter one) There is no trace of transdisciplinary research at policy level. This statement should not be interpreted as that there is no transdisciplinary research in Sweden during the 1980s. There are not, to my knowledge, any studies done on that subject.

4.4.2 Conclusion

There are some conclusions that could be made from this chapter. First it is clear that the Swedish dominant mode of knowledge production is Mode 1 during the period. Secondly that there are some strong initiatives during mid 1980's to reform the mode of knowledge production. This means that a more "Mode 2 -like" way of knowledge production is in its infancy at that time. However, the rate of reform in this area slows down, instead the government's efforts turns back to support knowledge production in more "Mode 1-like" way. Another indicator of slow development is the lack of appropriations in the government bills.

The international trend makes this development a bit blur. The main effort in the policies is to strengthen the developments at European level. The focus on participation in the EUREKA -project and later on in EC frame-programs is evident. Both these programs have clear Mode 2 features. However, it also

important to bear in mind that the Swedish participation at CERN and more basic research oriented international research institutes continues throughout the period.

This interpretation of the development suggests that it is only on the policy concerning “Swedish research” that the development towards a mode 2 system of knowledge production is retarded and that this due to the lack of systematic interconnectivity between the government, the universities and the industry in these issues. This hypothetical explanation needs further investigation. Maybe the next chapter, which is an analysis of the development during the 1990’s, can prove this explanation right.

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2003-05-25