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ABSTRACT

This article analyzes the increasing emphasis on research in the non-university higher education sector in Norway as an important faculty task in addition to teaching. This development provides an interesting example of the tensions and dilemmas that may emerge when institutions and individual staff members try to imitate the research profile of the universities. A central dimension is the tension between traditional professional and vocational norms for education and research and development work and academic ideals. A survey about research in the nonuniversity higher education sector was completed by 2,272 faculty members with the rank of college lecturer at state colleges. Their responses resulted in the identification of eight policy dilemmas faced by these colleges in their allocation of resources: (1) allocation of resources to research and development (R&D) or teaching; (2) distribution of R&D resources with regard to quality criteria versus needs for developing research skills; (3) distribution of R&D resources for institutional versus individual rights and obligations; (4) research-based teaching versus the dissemination of advanced knowledge; (5) staff recruitment; (6) the distribution of R&D resources in terms of specialization versus breadth; (7) vocational and regionally oriented R&D versus discipline oriented research; and (8) institutional control of R&D versus the staff's own preferences. (Contains 21 references.) (SLD)

Research in the non-university higher education sector – tensions and dilemmas

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Abstract

This article analyses the increasing emphasis on research in the non-university higher education sector in Norway as an important faculty task in addition to teaching. This development is an interesting example on the types of tension and dilemma that may emerge when institutions and individual staff members try to imitate the research profile of the universities. A central dimension is the tension between traditional professional and vocational norms for education and R&D work, and academic ideals. Based on a survey among faculty members at the state colleges, eight policy dilemmas faced by these colleges in their internal allocation of resources for R&D are illuminated.

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Introduction

During the last three decades the higher education sector has been subjected to dramatic changes in most countries. The expansion of this sector has led to a strong growth of the traditional university system, and to the creation of a more vocationally oriented higher education system outside the universities. In many countries new non-university institutions were established in addition to the upgrading of existing post-secondary schools to colleges of higher education. The main purpose of non-university institutions was to offer a wide spectre of vocational education, either to qualify for a specific occupation or to prepare for a profession. In particular, they were designed to be practice oriented, thus fulfilling specific needs of the economy and the welfare state not adequately met by universities. The common reference point was not universal knowledge, but rather to provide specialised occupational skills (Geiger 1992). In addition, these colleges were also supposed to meet regional labour market needs. In the latter part of the 1960s, the establishment of new institutions of higher education outside the traditional university centres was regarded as an important tool in this respect, both in terms of offering educational opportunities to people in the regions and creating new jobs.

A common trend in most countries seems however to be that non-university higher education institutions are striving to raise their status. This process has been referred to as *academic drift* (Burgess 1972). One of the main elements in this process, in addition to the tendency for institutions to introduce higher-level programmes, is the increasing emphasis on research and development (R&D) as an important faculty task in addition to teaching. Since the non-university institutions historically have suffered from a lack of academic status, their common strategy has been to orient most of their activities in ways that bring them closer to the university image. Hence, this development contributes to inhibit the intended development of functional differentiation between universities and non-university institutions (Birnbaum 1983, OECD 1991).

The recent OECD report *Redefining Tertiary Education* (OECD 1998) states that the policy intention to exclude research from designated non-research institutions seldom succeeds over time, but the reason for this is not that the staff see research as an important condition of good teaching. Rather, the issue is the status of research in tertiary education and the value that staff see in some kind of creative knowledge quest, whether research is traditionally understood or applied problem-solving. Irrespective of whether one agrees or disagrees with this conclusion, the role of research in the non-university sector has been much debated in many countries and is an important field of investigation.

In addition to the issue of whether other institutions than universities should develop research activities, the question of what kind of research has frequently been on the agenda. Based on the experiences with the development of the former British polytechnics, Pratt (1997) argues that research in such institutions, rather than trying to imitate the universities, should promote reflection on the implications of professional and educational practices, and the task of

offering advisory and consultancy services to firms. A significant problem in Britain was, however, the recognition and funding of research that do not confirm to existing paradigms of academic research. The polytechnics repeatedly complained that the research councils did not recognize or support the kind of research they undertook.

The introduction and development of research in the non-university higher education sector in Norway are an interesting example in this respect of the kinds of tension and dilemma that may emerge when staff and institutions engage in such activity. The non-university sector in Norway comprises 26 state colleges providing mainly vocationally oriented education different from the longer and more theoretical university studies. The state colleges were created in 1994 through a merging of 98 colleges outside the university sector (Skodvin 1997). This reform included virtually all state non-university colleges including the regional colleges, colleges of education, engineering, health education, social work, and various other small and specialised colleges. The colleges offer 2-4 year teaching programmes in professional and vocational fields, as well as 1-1.5 year university courses. The majority of the colleges also offer academic course programmes for a higher academic degree, and a few colleges also offer doctoral training in specific subjects. Half of the colleges have programmes in professional fields only, while the others offer programmes in both professional and academic fields.

The Act on Universities and Colleges of 1995 specifically alleges that the state colleges shall engage in research. The government has, however, also stated that this is neither an individual duty nor right, but an institutional responsibility, and also that these colleges should carry out research preferably connected to practice within specific fields, or to problems particularly relevant to their regions. The increasing emphasis on research as an important faculty task in addition to teaching creates, however, tensions and dilemmas within the colleges. The aim of this article is to illuminate the various tensions that may emerge with regard to internal allocation of resources for R&D. Eight policy dilemmas are discussed:

- Allocation of resources – R&D versus teaching
- Distribution of R&D resources – quality criteria versus needs for developing research skills
- Distribution of R&D resources – institutional versus individual right and obligations
- Research-based teaching versus dissemination of advanced knowledge
- Recruitment of staff – research abilities versus professional experience
- Distribution of R&D resources – specialisation versus breadth
- Vocational and regionally oriented research versus discipline oriented research
- Institutional control of R&D versus the staff's own preferences

This study is based on a comprehensive survey of R&D activities among faculty members at the state colleges. The survey indicates that large differences exist among colleges,

programmes, and individual staff with regard to involvement in basic research, applied research, development, and other related activities.

As a background to this analysis we shall first give a brief overview of the development of research in the previous non-university sector. Here we have to distinguish between the *regional colleges*, established in various parts of the country in the late 1960s and early 1970s, and the *professional colleges* for teacher training, health education, social work, engineering, etc. The regional colleges differed from the professional colleges in that, in addition to offering short-term education, especially in economics and business administration, they should also relieve the universities with regard to undergraduate level studies. University courses should, however, only constitute a small part of the total activities.

In general, many scholars emphasize how individual and group action of faculty may lead to academic drift at the institutional level (see Jenniskens and Morpew 1999). The role of the individual staff members in the development of research in the colleges is therefore particularly looked into, since the aggregate of their actions may have influenced institutional and national policy in this field.

The development of R&D in the college sector

According to the Ministry of Education, it was not intended that the regional colleges were to become engaged in research. Personal engagement in research was not considered necessary for teaching at college level. On the other hand, good contact with research institutions was regarded as a prerequisite to being kept informed about recent results. However, this policy changed fast. Already in 1970, Parliament stated that some research was desirable, but with the limited resources that were at disposal, it was unrealistic to aim at building up research requiring the provision of expensive equipment. But it would be natural to develop research activity within the humanities and the social sciences, as well as in industrial and cultural areas of particular relevance to the respective regions. In this respect the purpose of these new colleges were more or less identical with the initial British polytechnic policy (Pratt 1997).

However, soon after the foundation of the colleges, the teachers adopted research as a regular institutional activity. As early as 1970, Parliament underlined the importance of giving the teachers working conditions that would stimulate engagement in research, and the Ministry of Education repeated these statements in reports to Parliament in 1973 and 1974. This development was by and large the result of pressure from the colleges themselves. During the period 1972–74, about 60 per cent of the college teachers were engaged in such activities (Kyvik 1981). In 1975, the Ministry finally stated that the regional colleges were part of the Norwegian research system (Kyvik 1983).

Several arguments were launched to justify the necessity of undertaking research at the regional colleges (Kyvik 1981):

- The teaching at the colleges would improve if the staff engaged in research.

- The students would learn more if they came into contact with research.
- The colleges would recruit and keep good teachers if they could offer good research possibilities.
- The teachers were qualified to do research and this competence should be utilised.
- Some teaching programmes at the colleges were new and had to produce research results themselves.
- It was important to carry out research on regional problems and issues.

Nevertheless, these arguments may not be the most important for understanding the development of research at the regional colleges. The most significant explanation seems to lie in the criteria for recruitment of teachers, as research is an activity extremely dependent on personal attitudes and motivation. The decision by Parliament that the criteria of qualification should be comparable to those of the universities was therefore of great importance in the initial stage. The practice of undertaking peer evaluations of applicants was accordingly introduced at the regional colleges as well, and traditional university criteria thus became the principal basis for recruitment. With teaching staff selected on this basis, a development of the colleges as also becoming research institutions was likely to take place.

An additional explanation for this development is that the Ministry of Education did not make any regulations pertaining to the amount of time to be devoted to teaching and research respectively. This was left to the individual institutions. As a result, working conditions at the colleges did not differ much from those at the universities.

From the very outset there was public disagreement regarding the role of research in the regional colleges. Some feared that the development of R&D as a part of the functions of these institutions would be at the expense of the universities. Others warned against the dispersal of scarce resources to small institutions and staff who could hardly undertake serious research. Many also feared a rub-off effect whereby the professional colleges for teacher training, social work, health education, engineering, etc would also become more research-oriented. Should the staff at these colleges also have the opportunity to undertake research as part of their ordinary functions, this would be expensive and a waste of resources.

The majority of these colleges had an institutional culture where little interest was shown in R&D. The staff members regarded themselves predominantly as teachers. It was mainly through the recruitment of new staff who had interest in and ability to carry out R&D that research became established, initially in the colleges of social work and teacher training. Even though many were critical to the development of new activities that could draw attention away from practice-oriented vocational training, R&D should gradually come to play a larger role in these institutions. Attempts by the Ministry of Education to slow the pace of change on several occasions were opposed by Parliament, mainly because the colleges had more local support and were also considerably more effective in their lobbying activity than was the case for the universities.

In 1975, the right to carry out research was extended to include all other non-university colleges, even though the colleges of education, the colleges of engineering and the colleges of social work were not upgraded to higher education institutions before 1977, and the colleges of health education in 1981.

The legitimacy of R&D in all the colleges was confirmed in 1993 when the new joint working agreement for universities and colleges was ratified. According to this agreement R&D was generally considered to carry equal weight to teaching in all universities. Regarding the colleges, it was maintained that the current level of research should be considered the minimum but that possibilities should be given for further development. As the level of research to be undertaken by the colleges was not specified, discretion was left to the individual institutions to determine the amount of research to be undertaken.

When the individual institutions were incorporated into the state college system in 1994, they had very different presumptions for doing research. While the large majority of staff in the regional colleges, and to some extent in the colleges of social work, were involved in research, very few of the teachers in the colleges of engineering and health education were qualified and actively engaged in R&D. The teacher training colleges occupied a middle position. Differences in traditions, experience, organisation culture, vocational identity and external relations largely characterize the research profile and organisation in the new institutions.

In 1995, a common appointment structure at universities and state colleges was implemented in Norway. The academic positions are now professor, college reader (only at state colleges), associate professor, assistant professor, senior lecturer, and university/college lecturer. In addition, state colleges employ college teachers in practice related subjects, mainly in teacher training and health education. The lecturer position, which is held by close to 50% of the state college faculty (compared to slightly more than 5% of the university faculty), is predominantly teaching oriented. In total, two-thirds of the staff in the state colleges are college lecturers and college teachers, while in the universities the distribution of positions reflects their role as research and research training institutions (Kyvik, Skodvin, Smeby and Sundnes 2001). The reward system gives particular credit to traditional academic merits with an emphasis on research. A logical consequence of such a career system is an increased weight on research, and subsequently a strong driving force for academic drift processes in the state colleges.

The Ministry of Education introduced the senior lecturer position as an alternative to the associate professor position and as an alternative career path in order to encourage scholarly activities related to teaching and professional practice. This measure was based on the policy that it would be beneficial to distinguish between two types of teaching: *dissemination of advanced knowledge* and *research-based education* (The Hernes Commission 1988).

Advanced knowledge education is an indication of the mediation of well-established knowledge that synthesizes and systematises the results of previous research, and also reflects the fact that students' work is largely characterised by practice. Research-based education is not initially based on learning associated with well-established knowledge, but on familiarity with the latest research findings. Further, the students' own work is characterised by an element of original research. The Commission emphasised that research-based education commences with studies associated with the concluding parts of degree courses and which may be regarded as the first stage in research training. In accordance with this distinction, the Commission proposed that a clear boundary should be drawn between pure teaching posts and those that combine lecturing and research.

The data

The data on R&D in the state colleges are drawn from a mail survey among all academic staff in 1998 (Kyvik and Skodvin 1998). A total of 2,272 faculty members with the rank of college lecturer and higher completed the questionnaires (response rate 71%). In this survey the volume of R&D in the colleges and the extent of engagement in R&D-activities among individual staff members were mapped.

One problem facing us in this study is the unclear use of the research and R&D concept in the college sector. Research is frequently used as a synonym for R&D, and which again is used for activities which are not included in the R&D concept as applied in national and international R&D statistics.

Research and development (R&D) is a fairly imprecise term used for activities within relatively undefined boundaries. Nevertheless, the term is needed to define, describe and determine the extent of this activity. However, in practice R&D is used in various manners and often comprises other activities than those originally included in the concept. In order to be able to make international comparisons of contributions to R&D by various nations, the OECD has prepared guidelines for what should be included. These were first defined in 1963 and published in 'Proposed Standard Practice for Surveys of Research and Development', better known as the 'Frascati Manual' (OECD 1993).

The R&D concept comprises two main components: *research* and *experimental development*. The definition of research which was formulated by the OECD in the 1960s, and which has since formed the basis for its research statistics, has two sub-categories: *basic research* and *applied research*. The nature of R&D is however such that it is not possible to present operational definitions which may be applied unambiguously to each and every activity. In practice, those who report R&D activity cannot avoid making a number of subjective evaluations, both with regard to which activities come under the R&D concept – and those which do not, and also with regard to the category under which a specific R&D activity shall be registered.

The Frascati manual emphasises that the boundary between basic research, applied research, and experimental development, is difficult to determine for all fields of science. The problem is accentuated in the social sciences and humanities where the same research project frequently encompasses more than one type of activity.

Experimental development is that category which is most difficult to place within R&D statistics. Originally this was a concept that was used with reference to specific activities within technology, the natural sciences and medicine, but it has later been used within the social sciences. Within the latter field the Frascati Manual mention that experimental development can be defined as a process for mediating knowledge acquired through research for operational programmes including projects which were commenced with testing and evaluation as their objective. Further, the manual states that no meaningful examples of experimental development have been found in the humanities.

In consequence we have tried to separate activities in the college sector which can neither be classified as R&D with reference to the OECD guidelines, nor as education. We are thinking here of activities such as evaluation, testing, artistic development, and parts of that which are referred to as educational development. These are tasks that in practice may be difficult to distinguish from R&D in respect of the definitions given in the Frascati Manual. Most of these activities are referred to as R&D within the college sector. This is partly for practical reasons; R&D is a useful abbreviation to describe this type of activity, but there is also a tendency to include related activities as R&D in order to increase the status of this work, and also to improve possibilities for funding.

In this survey the most difficult field of demarcation is educational development. The Frascati Manual provides only few examples of such activities which are to be included under the R&D statistical concept. Examples are 'the development of means for determining which educational programme to use for particular classes of children' (p.71), and 'development and testing of a special reading programme among immigrant children' (p.158). But apart from these examples and closely allied activities, a large amount of educational development cannot be characterised as experimental development according to the OECD definition. An essential part of so-called 'educational development' would accordingly fall outside the official R&D concept. In the survey, the development of educational material and study programmes is considered as education-related activities.

We have consequentially distinguished between *basic research*, *applied research*, *experimental development*, and *other related activities* (evaluation, testing, and artistic development) in order to present a more precise picture of the activities in the colleges which cannot be considered either as teaching or teaching-related development.

For practical reasons we have found it appropriate to utilise the abbreviation R&D *et cetera* to represent both these two types of activity. R&D thus represents research and development in accordance with the definition in the Frascati Manual, while the *et cetera* or 'related work' applies to other scholarly work which is not teaching-related.

The extent of R&D in the state colleges

State college staff reported that they used on average 20% of their total working time for R&D and related work in 1997. In comparison, university faculty spend more than 30% of their time on research (Kyvik 2000). There are, however, large differences between staff members according to academic position and field. The higher the rank, the more time was used for this purpose. Full professors and college readers used on average 32% of their time for this activity, about the same as their university colleagues, compared to 15% by college lecturers. Table 1 indicates the large differences between fields. Faculty in the MBA programmes spent 29% of their time for R&D, etc compared to 12% of the engineering faculty.

Table 1 Percentage of working time used for R&D, etc by field.

	Per cent	(N)
Teacher training	19	(734)
Engineering	12	(356)
Health care education	19	(228)
Social work education	23	(77)
Economics and business-administration	23	(187)
Civil engineering	24	(58)
MBA-programmes	29	(33)
University disciplines	26	(281)
Total	20	(2067)

Table 2 shows the R&D profile at the colleges, indicating that approximately one quarter of individual staff time for R&D is more or less equally divided between basic research, applied research, development, and 'other work' related to R&D. Professors and college readers use most of their R&D time on basic and applied research, while development and other related activities are most common for college lecturers.

Table 2 R&D profile, by position

	Basic research	Applied research	Development	"Other"	Sum	(N)
Professor/ college reader	45	38	9	8	100	(103)
Associate professor/	32	30	19	19	100	(444)
Senior lecturer	20	34	26	20	100	(70)
Assistant professor	28	40	14	17	99	(99)
College lecturer	13	24	36	28	101	(850)
Total	21	28	27	24	100	(1630)

The R&D profile by field is shown in Table 3. There are certain differences between the different types of course programmes. The university disciplines, civil engineering, and the MBA-programmes differ from the others because of their predominant research component (approximately 70 percent of the total R&D-time). Basic research is given most attention in the university disciplines, and applied research in civil engineering. In health care education, teacher training and engineering education, development comprises the largest component. A relatively large proportion of the total time used for R&D falls within the category "other related activities" in this latter field.

Table 3. R&D profile, by field

	Basic research	Applied research	Development	"Other"	Sum	(N)
Teacher training	17	23	34	26	100	(595)
Engineering	14	20	36	30	100	(216)
Health care education	11	31	32	26	100	(146)
Social work education	20	29	31	20	100	(68)
Economics and business-administration	18	43	20	19	100	(161)
Civil engineering	24	46	18	12	100	(49)
MBA-programmes	35	34	12	19	100	(32)
University disciplines	43	32	11	14	100	(272)

Research is not the primary activity at the state colleges and many of the staff have neither the tradition nor ability to carry out this activity. The extent of publishing and various forms of publications must therefore be evaluated with this in mind. Nevertheless, the publication pattern is an important indicator of what comes out of the time at the disposition for R&D and related work.

In the questionnaire we asked the staff to report the total number of *published* scholarly/scientific works in the period 1995-97. We distinguished between articles in professional journals, articles in scholarly books, text books, and conference papers. Half of the academic staff in the state college sector had at least one publication during the years 1995, 1996 and 1997 (Table 4). On average, each faculty member published 2.3 articles, books or reports during this three-year period. There are, however, large differences between the different academic positions. The higher the rank, the more publications are reported. The professors/college readers had 7.7 publications during the period 1995-97, compared to 1.0 on average by the college lecturers.

In general, there are large productivity differences between individuals. A small proportion of the total academic staff account for a very large share of the total number of publications, while the majority are little productive. Only 20% of the academic staff have published more than one publication annually during the period 1995-97, and 9% of the faculty members account for half of the publications. In comparison, 20% of university faculty account for 50% of the published output (Kyvik 1991).

Table 4 Per cent of faculty who had at least one publication during the period 1995-97, and average number of publications, by position

	Proportion with publications	Number of publications	(N)
Professor/ college reader	86%	7.7	(112)
Associate professor	72%	4.2	(547)
Senior lecturer	66%	2.6	(95)
Assistant professor	69%	2.6	(179)
College lecturer	35%	1.0	(1339)
Total	51%	2.3	(2272)

Differences between fields are relatively large (Table 5). Both the proportion and the average number of publications during this three-year period were lowest in the fields of engineering and health education. On the other end of the scale, with highest proportion and average number of publications, we find faculty in the MBA-programmes, civil engineering, and the university disciplines.

Table 5 Proportion of faculty who had at least one publication during the period 1995-97, and average number of publications, by field

	Proportion with publications	Number of publications	(N)
Teacher training	50%	2.1	(808)
Engineering	29%	1.1	(376)
Health care education	43%	1.3	(267)
Social work education	54%	2.1	(93)
Economics and business-administration	60%	3.3	(197)
Civil engineering	73%	4.9	(63)
MBA-programmes	80%	5.4	(35)
University disciplines	76%	3.8	(299)

Tensions and dilemmas

As demonstrated by the data presented above, a notable feature of the state colleges are the marked differences between individual staff members with regard to involvement in research and development. In a further expansion of R&D within the state college sector, these institutions will face a number of dilemmas, primarily related to the tension between academic criteria and traditional practice-oriented norms for education to teachers, social workers, nurses, engineers, etc.

a) Allocation of resources – R&D versus teaching

How much weight should be attached to R&D compared to teaching? The Act on Universities and Colleges contains no guidelines regarding time-use by staff for R&D purposes. In 1991, the Ministry expressed that the share of R&D activities should generally be around 25% versus 75% for teaching. The institutions should, however, evaluate the distribution for the individual staff members according to the requirements of the teaching programme. There should be reasonable opportunity for all teaching staff to develop their own personal skills. During the parliamentary debate, this objective was somewhat changed. The parliamentary committee opposed a limit of 25% of the working year for academic staff to devote to R&D. The committee was of the opinion that there should be considerable flexibility. As a general rule the present level of research should be upheld as a minimum with possibilities for extending this. The Ministry's interpretation of Parliament's resolution was that the individual college had the right to use at least 25% of the teaching staff aggregate for R&D, but that this was not an individual right. It is the institution which shall determine the distribution or resources among the staff when determining the annual work programme for each individual.

A first dilemma facing the individual college is accordingly the level of resources to be used for R&D. In 1997, the academic staff at the colleges used on average 20% of their total working time for R&D and related activities. There are, however, large differences between

individual colleges varying between 10% and 35%. These differences can for the most part be attributed to the educational profile of the colleges. Institutions offering many vocationally and professionally oriented programmes, particularly in engineering and health education, spend relatively little resources for R&D etc. At some of these colleges more than 40% of the academic staff reported that they did not take part in such activities.

At the present time there is nothing to indicate that the college sector will receive further resources above the current level in order to expand R&D activity. If the state colleges with low R&D activity wish to use more resources for research and development, this will subsequently result in a reduction in teaching hours.

The question is therefore whether a transfer of resources from teaching to research is desirable and appropriate in the light of vocational education as a prime function of these colleges. R&D activity can just as well contribute to reducing the focus on teaching as well as to improve it, particularly when promotion will essentially be based on documented scientific activity undertaken outside teaching responsibilities. In addition, there is the question as to whether the staff are able and motivated to undertake R&D, and whether it is ultimately in the interests of the staff, students or the college to reduce the volume of teaching.

b) Distribution of R&D resources – quality criteria versus needs for developing research skills

The distribution of academic staff in the various positions reflects the formal competence level in the state college sector. In 1997, only three per cent of the faculty were full professors or college readers, and ten per cent were associate professors or senior lecturers. There are, however, large differences between fields. The proportion of staff who are professors or associate professors is much higher in the former regional college course programmes than in the programmes for professional education. Health education in particular has a very strong concentration of staff at the bottom of the appointment hierarchy.

The considerable differences in R&D skills between the staff in the college system, together with the scarce resources for research and development compared with the university sector, reveal the need for priorities in the distribution of R&D resources. Here, the colleges are facing a fundamental dilemma: what proportion of time resources to be assigned shall be based on staff skills and the expected quality of research, and how much shall go to the development of research skills among the staff? Both needs are important and legitimate criteria in the distribution, both in respect of a sense of justice and in the light of public objectives in the development of the college system.

c) Distribution of R&D resources – institutional versus individual rights and obligations

The relation between quality and the development of skills as criteria for the distribution of resources is otherwise closely associated with the problem of institutional and individual rights and obligations to undertake research and development.. Even though the Ministry has

made it clear that R&D activities are neither an individual duty nor right at the state colleges, the Norwegian Association of Research Workers, for example, is seeking to have this changed.

There is, however, internal disagreement in the college system on this question. Others have expressed viewpoints to the contrary and maintain that instead of a universal research obligation, the colleges should rely on a differentiation of the staff. Some should receive the opportunity to undertake research while others could concentrate on keeping themselves abreast of developments in their field and those skills in which students are to be trained. Further, it is maintained that there is a number of pragmatic reasons that individual research obligation would not be in the best interest of the colleges. It will result in a waste of resources in so far as a number of the present staff are neither motivated nor able to carry out high quality research (see Table 4). To distribute scarce time and research resources to these will only lead to poor research which, in addition, would be to the discredit of colleges as research institutions.

The question is whether the state colleges are managing to distribute the allocated time for R&D to those staff who are actively engaged in research, or whether this time resource will become something of a fringe benefit. There has been a tradition for this in many of the former colleges. The main impression is that the college leadership desire that R&D resources should be more concentrated on a smaller number of staff rather than being spread broadly throughout the institution. A concentration of resources in this manner have, however, been difficult to achieve on account of the opposition of the employees associations at the local level. The question of allocation principles with regard to R&D time in different courses and a differentiation between academic staff based on individual ability and documented R&D contributions is thus difficult to solve.

d) Research-based teaching versus dissemination of advanced knowledge

A fourth tension, which is closely related to the above mentioned, is to what extent teaching in the colleges should be research-based. The Act on Universities and Colleges state that the institutions 'shall offer higher education based on the most advanced scientific research, artistic development and empirical knowledge.' It is, however, unclear as to what this implies in practice. Should all teaching staff do research, or is it sufficient to disseminate advanced knowledge produced by other researchers?

The strongest interpretation is that quality education can only be given in those subjects where the teachers themselves have undertaken research, and where those who lecture have high qualifications. The opposite interpretation is that adequate teaching can be given by staff who have held themselves up-to-date with the essential literature in the field, but without having undertaken research personally.

In practice, the first interpretation is hardly sustainable but must be regarded more as a vision rather than what may be possible to attain. First, it would scarcely be possible to achieve top international recognition in all fields. Secondly, staff would be required of necessity to hold lectures in areas and subjects where they themselves have not undertaken research. Neither is the second interpretation sustainable as a general rule as the colleges, in addition to providing basic education, should become partly engaged in final degree and doctorate studies. It follows that the requirement where a lecturer shall teach the principles of research to his or her students, then he or she should be competent in that area and be engaged in it (Torgersen 1992).

But what about courses where the students themselves shall not be engaged in research? Is it then necessary that the teachers themselves shall undertake research? It is this question where there is most disagreement, and which also creates tensions within the colleges.

e) Recruitment of staff – research abilities versus professional experience

Another dilemma is associated with recruitment of new staff. In the former regional colleges, the main weight was attached to research ability, while practical experience and pedagogic qualifications were accorded more importance in the other colleges. If the staff were to carry out research of a high quality, well-documented research ability was a pre-assumption. At the same time it was maintained that in the professional studies practical experience in a specific field was a more important qualification than research. It is not regarded as reasonable to educate, for example, pre-school teachers, nurses and physiotherapists with staff unfamiliar with the practice of their profession, and unable to teach students technical, professional and social skills in working with children, patients and clients (Stjernø 1999). It has been maintained that the academic drift processes have now gone too far in some of the professional programmes, e.g. nursing education, and complaints about weak practical skills among recently trained nurses are now being voiced (Skoie 2000).

f) Distribution of R&D resources - specialisation versus breadth

The Act on Universities and Colleges links the higher education institutions through the 'Network Norway'. A central vision behind this network was that increased size of colleges through merging, along with disciplinary specialisation and the establishment of 'centres of excellence' within institutions, and better co-operation between institutions, should enhance the quality of higher education. The Ministry expressed that the colleges should be able to make important contributions in those areas where they possessed special skills and that were not always covered by the universities. In 1995 and 1998 respectively, the Ministry therefore established about thirty 'nodes' or 'centres of excellence' in state colleges.

The concept of the Network Norway implies, however, that the development of node functions, with the internal redistribution of resources this necessitates, conflicts with the wish and need in individual colleges for equal distribution of R&D resources across fields. The Ministry has stated that the distribution of nodes to a state college does not in itself mean an

increase in the budgetary framework. Hence, it is up to the institutions to follow up responsibility for the development of nodes and to prioritise resources. If a real strengthening of the nodes should take place, other activities will have to be toned down. Specialisation will conflict with local needs for academic breadth in teaching programmes and R&D profile.

g) Vocational and regionally oriented R&D versus discipline oriented research

The Ministry has emphasised that the state colleges shall be able to carry out research, development and other scholarly work, preferably linked to practice in the respective study areas, or to problems particularly relevant for the region. Not least would this apply to professional studies where, in the opinion of the Ministry, there was a considerable potential for research that could strengthen the skills necessary for specific services, particularly in connection with the major areas of the public sector.

If the objective of this activity is to enhance the quality of education in the professions, or to focus upon problems associated with the commercial life of the region, then the following question may be asked: Is the considerable attention afforded to traditional academic research among many staff members (see Table 3) the way forward, or should the main attention be given to other scholarly work? Indeed, this question will be pertinent with increasing numbers of qualified researchers in the colleges. It has been claimed that training in the professions scarcely benefits from staff who, through their research interests, consider themselves to be closely allied to the academic disciplines, while research specifically associated with the main objective of the colleges remains the responsibility of staff with close links to the professions but without particular research ability. The trend towards 'academic drift' is conspicuous, and in the new colleges with a mixture of university subjects and professional courses the question of the content of R&D could be contentious.

h) Institutional control of R&D versus the staff's own preferences

The final dilemma in this connection is the relationship between the college's management of R&D activity and the staff's individual priorities. All the colleges concerned have formulated a research strategy. This has generally been in accordance with public policy regarding R&D in the college sector. The question remains as to the extent to which it is both possible and desirable to control and direct the research activities of the individual staff members. This is largely concerned with the question of vocational and regionally oriented research as opposed to discipline-based research, and the relationship between nodes and other programmes in the colleges.

As opposed to the universities where individual research is a time-honoured principle, the distribution of resources in the colleges and the purpose for which these are used are in principle the responsibility of the board and academic leaders on the institutional, faculty, and department levels. Formally, the right to carry out specific research projects has to be approved by the head of department. However, involvement in the choice of such themes or how they are to be carried out seem to be rather uncommon.

In principle, the individual college boards have considerable possibility to determine the direction and content of research. In practice, however, it can scarcely be avoided that it is the individual staff members who are responsible for carrying out the research, and that the possibility for them to cultivate their own personal interests is considerable. Studies of academic organisations have shown that the staff have their academic identity and loyalty towards the discipline to which they belong and not to their institution (see for example Clark 1983). The academic reward system and the status hierarchy are, in principle, more closely tied to the discipline system, and less so to the institution where one is employed. If discipline-oriented basic research also are the activity that is rewarded, then for many there will be little incentive to carry out research focussed on professional practice or local conditions. Virtually no measure will be effective should the individual researcher be more oriented towards the national or international research community (in addition to enhancing the possibility of external financing) than adherence to the institution's directives for R&D work. It may therefore be questionable whether the sum of individual research interests will correspond to the college's research strategy programme.

Conclusion

In this article we have pointed to a number of dilemmas and challenges facing the state colleges in the future development of R&D. A central dimension is the tension between the traditional professional and vocational norms for education and R&D, and academic ideals. This tension has traditionally been between the regional colleges on the one hand and the professional colleges on the other. As a result of the merger of these institutions most colleges have been drawn into this conflict. The nature and extent of this tension varies between the colleges, dependent upon the combination of professional studies, programmes associated with the former regional colleges, and other programmes of a more academic nature. However, this tension is also found in colleges offering only professional studies. The increasing number of staff possessing a PhD has resulted in a marked distinction between those with academic interests and research motivations, and those staff adhering to traditional norms of education oriented towards the professions and practice related activities.

It appears as though the first-mentioned group has acquired increasing influence in the college priorities, although paradoxically without that they have achieved improved conditions for research. Rather, we have seen a tendency towards a larger degree of equality of R&D conditions irrespective of subject and employment status. This development is based on the general need for increased expertise in the field of research, as well as on labour union demands for equal rights in the use of working time. A large proportion of staff who have not previously been particularly engaged in research appear to have common interests with those who are research-motivated in reducing their teaching load. A broad and unclear R&D concept is used to legitimate teaching related activities as research that should receive internal time and resources. Changes in working conditions among, on the one hand, staff in the university subjects, civil engineering and the MBA programmes, and the major part of

professional education programmes on the other, illustrates this development. Faculty in the latter programmes have gotten better conditions for undertaking R&D through the college reform, while staff in the former group of studies are in general dissatisfied with the priorities given in the new college system. In theoretical terms, this homogenisation process across study programmes can be regarded as institutional isomorphism (Riesman 1956, DiMaggio and Powell 1983).

There is a clear tendency towards academic drift, driven by the aggregate of individual actions by faculty, by the Association of Research Workers, to some extent by the institutions themselves, as well as by the reward system embedded in the common national appointment system. Even though countervailing processes take place, the development over the last 20 years has shown gradually more emphasis on academic norms and ideals to the detriment of traditional vocational and practice related education. In this process, faculty motivations for the involvement in research are an important factor.

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