Chapter 11
Practice-Oriented Research: The Extended Function of Dutch Universities of Applied Sciences

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The Dutch Binary System

A main feature of Dutch higher education is its binary structure, which distinguishes universities from institutions for higher professional education – *Hogescholen voor Hoger Beroepsonderwijs* or HBO. Universities and HBOs are developed under very different historical conditions and are based on different rationales.

There are 13 Dutch universities, 9 of which provide teaching and conduct research in a wide range of academic disciplines, 3 with predominantly a technological focus and 1 agricultural university. In addition there is the Open University and a number of small institutes with university status.

Many *hogescholen* have a long-standing tradition, but the HBO sector as part of tertiary education dates back to the 1960s, when colleges for higher professional training were upgraded. Formally, *hogescholen* belonged to secondary education until, in 1986, they were legally acknowledged as a subsector of the higher education system. Because of the sector's fragmented character, the government initiated major reforms in the 1980s. These resulted in the merging of more than 400 smaller colleges into large institutions, currently providing a wide range of professional courses with a standard period of study of 4 years leading to the bachelors degree. Today there are some 45 publicly funded *hogescholen.* Their main task is to provide theoretical and practical training with an explicit professional orientation. Since 2001, they also have the task of transferring and developing knowledge for the benefit of the professions in both the industrial and service sectors. Their primary focus is on regional and local needs – although, increasingly, they tend to operate nationally and internationally too.

In the international context *hogescholen* have adopted the name 'universities of applied sciences' (UASs). After having stuck for some time to 'universities for professional education', the Minister of Education in 2008 recognised the new name of UAS formally for all multi-sectoral *hogescholen*. Institutions focusing on

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specialised areas may suggest their own names. The Minister motivated his decision by referring to the need for a univocal name of *hogescholen* in the international context. Moreover, the name expresses both the extended task and the applied character of teaching and research. In his view, the name UAS fits into the bachelor's–master's structure, in which academic and professionally oriented education can be distinguished. Such a name contributes to the international transparency of UASs as providers of practice-oriented higher education and research. Because of this recognition, the term UAS will be used alongside *hogescholen* in this chapter referring to all HBO institutions.

The relationship between universities and UASs has been the subject of continuous debate. Although there are growing areas of overlap between these institutions, the government maintains a basic distinction between the two as a guarantee of institutional differentiation. Despite the binary policy, both sectors are incorporated in a single Higher Education and Research Act of 1993, encompassing a range of regulations that apply identically to both sectors. This law also describes as an explicit aim of universities to ensure that knowledge is transmitted for the benefit of society, an aim which over the years has been strengthened by emphasising societal relevance in teaching and research. Universities are also engaged in higher professional education in the sense that a fair majority of their graduates will enter professional life rather than the academic world.

However, a major difference is the status of research and the provision of postgraduate studies. For universities, research seems to have become their main task but for UASs it still is an auxiliary function in the context of professional development and education. Although this task was already acknowledged in the 1993 law, only the last few years witnessed a strong trend towards the extension of the research function of UASs and the provision of postgraduate studies (master's and professional doctorates). Traditional universities consider these claims as a threat to their privileged status and fear a closer parity in terms of research resources. Nevertheless, from 2001 onwards the Government has supplied the UASs with a modest but distinct budget for the development of their research.

This chapter seeks to analyse the legitimate research claims of Dutch UASs. It subsequently analyses how the research function has been conceived in national policies, the emerging funding schemes for research, strategies developed by *hogescholen* regarding organisational structures, human resources and research reward systems.

Before turning to these issues, three structural features of the Dutch higher education system will be highlighted which have to be taken into account in an international comparative analysis of UASs.

First, the comparatively large share of UASs in the Dutch higher education system. In 2007, out of a total of about 586,500 higher education students, 65% were enrolled in UASs (374,500), against 35% (212,000) in universities. This nearly 2:1 balance in favour of the UASs is much higher than the OECD averages and higher than in most other countries with a binary structure. Mass higher education in The Netherlands is mainly in the UASs. The traditional university sector serves only

about 15% of the youth generation and the UAS sector roughly 30%, resulting in a total participation rate in higher education of about 45% presently.

The comparatively large share of the student body in Dutch UASs is partly due to the fact that the *hogescholen* cover a very broad range of subject areas and provide an enormous variety of study programmes. Subjects like teacher training, nursing, paramedics and fine arts are provided by UASs, whereas in other countries these are provided by universities. Since there is no general rule that courses in these subjects are of a lower level in The Netherlands than in countries where they belong to the university sector (in some instances on the contrary), the binary divide gets in the international perspective a somewhat arbitrary character. The following figure presents the student enrolment in the major fields of study.

The UASs have a total of 27,175 full-time equivalent staff (FTE) in 2007, divided between a teaching faculty of 14,886 (FTE) and a non-academic auxiliary staff of 12,289 (FTE). The faculty to student ratio is thus roughly 1:26, whereas the faculty to auxiliary staff ratio seems unduly low.

Second, *hogescholen* differ considerably in scale. Some 15 out of the 45 UASs are multi-sectoral institutions, encompassing a broad range of fields of study; their student enrolment ranges from 12,000 to 35,000. Another 15 focus mainly on one or two areas such as teacher training, fine arts, agriculture or hotel management; their enrolment will range from several hundreds to a few thousand students. The middle category of some 15 UASs will cover more than one subject area, but have student numbers that do not exceed 10,000. Some UASs have recently expanded their role in shorter programmes (2-year Associate Degree, similar to the Foundation Degree in the UK), in dual programmes (work-based learning) and part-time education.

In addition to the bachelor phase, programmes at master level are gaining in importance. There is a growing demand, especially by graduates from UASs, who after a period of working experience are confronted with the need for advanced levels of training. When in 2000 in The Netherlands the bachelor–master system was introduced, the right to provide accredited 'professional masters' was unequivocally granted to the UASs as well, but they were not eligible for public funding.

However, in 2007 the Minister of Education decided to make a limited number of these so-called 'professional masters' eligible for public funding. These concern labour market relevant UAS master's in some priority areas, mainly in health, teacher training and arts. The funding is on a temporary basis for a maximum of 4 years and thereafter these programmes have to be financed privately. This public funding of UAS master's occurs on a structural basis which means that there will be a reserved budget for new master's to be eligible for public funding (a budget of €5 million available in 2008, growing to €20 million by 2011; Ministry of Education, 2007).

As Table 11.1 shows, in 2007 about 3% (12,500) of the total UAS student population enrolled in master's and advanced professional diploma courses. Many of the latter courses have been converted into master's programmes under the formal national accreditation scheme. However, the number of privately funded professional master courses in Dutch UASs is also steadily increasing, particularly in

Table 11.1 Enrolment in Dutch UASs in 2007

Main fields of study	Bachelor's	Master's	Advanced professional diploma
Economics, management, law	135,000		
Agriculture	9,000		
Engineering	60,000		
Health	29,800	700	
Social studies	54,900		100
Teacher training/pedagogy	57,200	3,200	6,600
Arts	16,100	600	1,300
Total	362,000	4,500	8,000

Source: Ministry of Education, Culture and Science (2008) (data round off).

engineering and economics/management. As part of their human resources strategy some *hogescholen* now also develop an active policy to attract students and faculty who are prepared to do a doctoral programme leading to a PhD in collaboration with universities.

Third, access requirements to higher education differ between universities and UASs. The 6-year university preparatory education (VWO) qualifies for admittance to both university and UAS (first year) courses. The UAS has two additional entry qualifications: a 5-year general secondary education (HAVO) and a senior 4-year, level 4 vocational education. For obvious reasons university freshmen are thus better qualified when they enter higher education than the average UAS freshmen; the difference is generally estimated to be a year of secondary education. UAS bachelor courses for this reason have a standard length of 4 years (240 ECTS) as compared to 3 years for a university bachelor (180 ECTS), resulting in a roughly equal graduation level. Additionally, other entry qualifications are increasingly applied, such as work-related qualifications and other acquired competencies.

These structural features make UASs, as a whole, an extremely diversified sector of higher education. Clearly, the UAS 4-year bachelor degree is the formally recognised professional qualification, and its quality level is assured by the national accreditation system, but the route to that degree can vary substantially. The UASs have to deal with the demands of a very heterogeneous student population, and they see it increasingly as their mission to deliver education that is tailored to the individual needs and capabilities of their students.

National Policies for Research in UASs

National Goals and Conceptions of Research

Although the word 'research' in relation to the *hogescholen* already appeared in the 1993 Higher Education Law, the term was not defined in a clear way: *Hogescholen have as a task to provide higher professional education. They can carry out research to the extent that this is connected with the education at the institution.* The law does

not contain further regulations regarding research and in subsequent years no budget was available for this education-related research.

This changed against the background of the public debate on the growing importance of knowledge utilisation and innovation in the context of the Lisbon 2000 Agenda and the need to increase investments in research and education. The national Innovation Platform, chaired by the Prime Minister, was established to foster ways of enhancing the innovative capacity of the knowledge-based economy. Given the professional orientation of the UASs it seemed natural to assign to them a specific role in the innovation process by intensifying collaboration with industry and particularly with SMEs. Various national policy agencies stressed the particular role of UASs to develop new ways of knowledge transfer, knowledge circulation, and attempted to define a distinctive research function for UASs. The major views on such a function will be highlighted here.

In their joint report, the Advisory Council on Science and Technology (AWT) and the Education Policy Council (*Onderwijsraad*) advocated a strengthening of knowledge circulation by establishing more systematic partnerships between higher education institutions and their external stakeholders. Central in their view is the concept of knowledge exchange between UASs and professional practice – also indicated as 'knowledge circulation' (AWT, 2001). In other reports by a working group of the national employer's association (VNO-NCW) and the HBO-council, and by the national association for SMEs (*MKB-Nederland*) the view was expressed to transform UASs from a mere education centre into a 'knowledge gateway'. Knowledge circulation is not merely a matter of education, but also of innovation-oriented collaborative research and development. Business would, through exchange of personnel such as guest lectureships, internships for teaching faculty in industry, as well as through applied and design-oriented research, support UASs in taking up new trends and build up new knowledge (MKB-Nederland, 2006; Werkgroep, 1999). All these reports laid the foundation for a further conceptualisation of research by UASs.

Several attempts have been made to distinguish the type of research envisaged for the UAS from university research. In various documents reference has been made to distinction of Mode 1 and Mode 2 type of knowledge production (Gibbons et al., 1994), arguing that various components of Mode 2 research would be the domain of the UAS. However, since also traditional universities do a substantial part of their research in the broad Mode 2 category it is difficult to make this into a clear cut demarcation between universities and UASs. The AWT (2001, 2005) considers 'design and development' as an appropriate term. Whereas the universities contribute to the development of basic scientific knowledge as well as to the utilisation of this knowledge in society, research in UASs should contribute to the maintenance and development of professional practice in society. As this practice is increasingly evidence-based and thus knowledge-intensive, innovative research and knowledge transfer play an ever-growing part in it. Referring to types of research, the AWT provides a schematic overview of the different research activities which distinguish research by universities and UASs. The council typified research by the UASs as 'Edison research' compared to the 'Bohr research' of the universities, thereby

referring to Donald Stokes' classification of four types of research known as 'Pasteurs' quadrant' (Stokes, 1996). According to the AWT this typology should not to be understood as if research at universities and UASs would be mutually exclusive, and in research practice there will be much room for variation and overlap in individual research projects. But generally, this conceptualisation gives an initial rough distinction between the research activities of universities and UASs.

Another reason for assigning a research function to UASs stems from the changing conditions of professionalism. There is a growing awareness that in many contemporary work settings professionals are in a permanent process of learning and innovation. Although there is still a certain amount of routine involved, UAS graduates will, as professionals, have to be adaptive and actively involved in continuous change rather than applying a fixed set of knowledge and skills. Competencies to analyse problems, to synthesise, to propose solutions and to communicate about various challenges also in a multidisciplinary environment, are becoming increasingly important (de Weert, 2006). An international commission argued that these abilities are not only important in research environments but also in industry and society at large: 'Practical and professional experience of students, by preference from the start of their study and in combination with applied research, will allow these competences to develop' (Committee Review Degrees, 2005).

The role of applied research in professional practice implies a growing need of professional curricula to pay attention to research-related subjects and to enhance the abilities to translate knowledge to application. Basic research competencies of graduates are felt to be necessary to support evidence-based practice.

The distinctive research function of UASs has been broadly supported by virtually all major stakeholders on the national level. The outcome of this debate is that from 2001 onwards the Government supplied the UASs with a modest but distinct budget for the appointment of a new faculty position of *lector* and the creation of *lectorates*. In addition, programme subsidies have been made available in the context of national innovation projects (see for further details below).

Overall two main objectives of research at Dutch UASs stand out. First, the improvement of education through the interface between education and professional practice. Second, the contribution to innovation through knowledge exchange with industry and regional collaboration, especially with SMEs. Terms most widely used are 'design and development' and particularly 'practice-oriented research' or 'design research' rather than 'applied research'. The term 'practice-oriented research' is believed to do more justice to the professionally oriented character of research as it encompasses a diversity of research practices to be carried out by UASs (Borgdorff, van Staa, & van der Vos, 2007).

Priority Setting Between Teaching and Research

There is no explicit reference made in government or other papers to the weight of research compared to teaching. As *hogescholen* are predominantly 'teaching institutions', it was clear that research should be placed in the context of teaching.

A separate development of teaching and research is seen as against the general philosophy of the role of practice-oriented research being an integral aspect of the educational process. Politically, this has been a strong argument to find a majority to assign the UAS a distinctive research role.

Given the other objective of research – knowledge exchange with industry – it is clear that the demand for problem-solving knowledge from professional practice dominates the agenda, making research programming and the construction of a sustainable research infrastructure of prime importance. It is seen as a challenge for UASs to combine effectively the development of their research agenda with curriculum development and innovation, and the active involvement of teaching faculty and students in research projects.

Funding of Research

University research is, parallel to but apart from the funding of education, directly funded by the Ministry of Education (first flow), by the national research council (second flow) and by third party contract (third flow). Allocation of funds by the research council is based on evaluation of research excellence. Recent years show an increase of the second flow to about 20% of the total budget at the expense of the first flow which is presently still 50%, whereas some 30% of funding comes from third party contracts. Research is increasingly assessed in terms of utility, relevance and 'valorisation' of results.

Figure 11.1 presents the different income sources of UASs. The block grant is with 67% the largest part, predominantly meant for education. The grant is indirectly based on the number of enrolments, being an estimate of the teaching load ('student demand'). This teaching load is a multiplication of enrolment and a

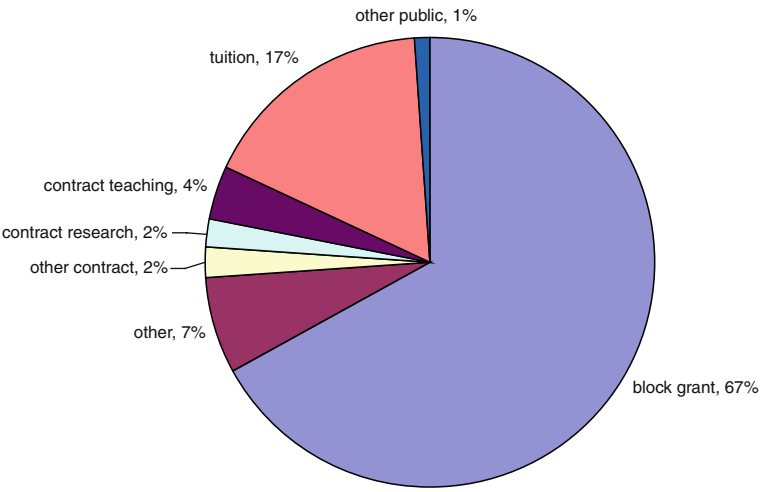

Fig. 11.1 Budget of UASs, by source of income (2005/2006). Source: Dutch Bureau for Statistics

so-called dynamic demand factor. This dynamic demand factor can be interpreted as the ratio of the normative funding period and the actual registration period for graduates and drop-outs. Funding is therefore also dependent on graduation rates.

The block grant includes as a targeted element the government funding of the *lector* as leader of a *lectorate*, to be understood as an organisational setting consisting of a number of faculty members around a *lector* that aims to give UASs an impulse to develop their research activities. For the allocation of this funding, initially a special foundation has been established (*SKO – Stichting Kennisontwikkeling HBO*), which under the authority of the HBO council plays a key role in awarding applications by UASs to install a *lectorate*. The funds allow the recruitment of a *lector* plus the funding of activities of faculty and some external members of a 'knowledge circle'. For this purpose the Ministry and the HBO council signed a covenant on the basis of which SKO developed the following indicators which are used to assess applications for *lectorates* (SKO, 2005):

1. Sustainable effects on the adaptation of the curricula, professionalisation of teaching faculty or change in curricular structures.
2. Relationship as far as content is concerned with similar networks of teaching faculty internationally.
3. Relationship as far as content is concerned with companies or non-profit institutions (in the region and beyond).
4. Significant increase of knowledge transfer towards the private sector or professional domain.
5. Substantial increase of revenues from contract activities and applied research.

The system of *lectorates* started in 2001, with a government budget of around €12 million which over the years increased to €50 million in 2007. The number of *lector* positions has grown rapidly, from 18 in 2002 to 290 in 2006 and over 350 in 2008. The aim is that in a few years time about half of all teaching staff will belong to some knowledge circle, which obviously presupposes a substantial further growth of the number of *lectorates*.

The SKO-regulation came to an end in 2008. Thereafter the funding of *lectorates* became part of the block funding of UASs as targeted funding of €50 million for R&D in 2008.

There are three streams to fund the *lectorate*:

- Government funds
- Funds made available by the UASs themselves
- Revenues from contract activities.

Over the years the share of the latter two streams has increased, which indicates that the position of the *lectorate* is increasingly recognised by both the UASs and their external constituencies. On average a *lectorate* will presently be funded from these three sources by a 50:25:25 ratio, with the latter source growing and the first diminishing.

In addition to the funding of *lectorates*, there are two other resources for research, namely, the so-called RAAK-programme and the 'knowledge vouchers'.

The RAAK-programme (*The Regional Action and Action for Knowledge Circulation*) aims to stimulate regional collaboration between UASs and business, especially SMEs and public institutions with a view to develop joint innovation activities and stimulate knowledge exchange and circulation. With government funding, the RAAK-programme is on the national level managed by a foundation, the *Stichting Innovation Alliance* (*SIA*), in which various partners are participating such as SME-Netherlands (National federation of SMEs), the Confederation of Netherlands Industry and Employers (VNO-NCW), the HBO, as well as some (applied) research institutions. Joint projects can be submitted to SIA.

Altogether overall funding of over €30 million annually is attracted by an initial contribution from RAAK of about €20 million. The other part of the total project costs are financed by the cooperating small and medium enterprises (SMEs) and public institutions. Although there are no formal conditions for parties to co-finance, they contribute about a third of the costs (SIA, 2009).

The so-called *knowledge vouchers*, issued by the Minister of Economic Affairs, are in essence a subsidy for companies (SMEs) to buy research services from knowledge institutions in order to improve knowledge utilisation and the innovation of processes, products and services. The value of a 'knowledge voucher' is €7,500 of which SMEs should contribute one third themselves. Since 2006, there are also smaller vouchers available representing a value of €2,500 aiming to get SMEs acquainted with research institutions. The use of these vouchers has increased from 100 initially to over 6,000 vouchers. UASs in general take about a one third share in the spending of these vouchers, thereby attracting another €10–15 million, albeit in small portions.

If all these resources are taken together, the total research (non-education) government grant to UASs amounts to nearly €80 million in 2008 out of a total public UAS funding of around €2.05 billion in 2007 (thus roughly 4%).

Research Strategy in Dutch UASs

Institutional Strategy and Priority Setting

Inspired by the national debate and policy, most *hogescholen* have in the last few years incorporated the research function in their strategic plans. Despite some institutional variance, UASs display a remarkably consistent and uncontested frame of reference on the nature and place of research in the organisation. From an analysis of the institutional annual reports the following common components can be discerned (CFI, 2006):

- Initiatives for research emanate from the needs of professional practice
- Research should be relevant for the quality and innovation of education and the professionalisation of the teaching faculty
- Research should be practice-driven in that it is oriented to solve practical problems and to intensify collaboration with external constituencies.

These three elements in combination mark the specific character of the research by UASs.

It would be misleading to assume that the practice-driven research at UASs is restricted to short-term and small-scale research and that the focus is solely on providing direct solutions to day-to-day practical problems. Although UASs would not exclude such activities, practice-oriented research – the term also preferred by UASs themselves – encompasses more than a collection of more or less separate short-term advices and problem-solving. Practice-oriented research focuses mainly on the more strategic issues deriving from professional practice and from problem-solving demands of SMEs. The ambition of UASs is to employ the larger part of their research capacity on these strategic issues in long-term research programmes, rather than in short-term consultancy.

Research is understood as knowledge production which contributes to the development of an 'evidence based professional practice' (Leijnse, 2005). The research questions emanate from the cooperation with professionals in the world of work and their relevance for sustainable network structures. Such a view has important consequences for the way UASs organise their research and how the quality of research is assessed by both peers and external stakeholders.

The Lectorate *as the Organisational Setting of Research*

The initiative of the *lectorate* as a system for the development of research in UASs has found a warm reception in the institutions. This was all the more surprising as this did not fit in with their standing tradition nor with the composition and qualification of their faculty. Since its existence in 2001 the number of *lectores* has increased rapidly and given the budget available the number of lectores increased by the end of 2008 to over 400.

The creation of the highly qualified position of *lector* (at professorial level[1]) was seen as a means to enhance the quality of professional education and the qualities of the teaching faculty. The leading idea is that *lectores* are to respond to the knowledge needs of SMEs and professional organisations among others and to enhance research skills and capabilities in UASs by conducting research projects to which faculty members are recruited on a part-time basis. For this purpose, *lectores* are expected to create 'knowledge circles', each consisting of a group of 10–15 staff members. A knowledge circle aims to enhance contacts and knowledge exchange with industry in the field of applied and developmental research. Through such a circle the *lector* plays a crucial role in strengthening the links between UASs and industry and other organisations. *Lectores* are expected to acquire contracts from third parties and to develop professional networks in their domain.

[1] The *lector* should not be confused with the traditional positions of lecturer or reader in the Anglo-Saxon tradition; Dutch UASs tend to use internationally the term 'professor' for their lectores.

One of the conditions for funding is that the *lectorates* should be evaluated on a continuous basis. In the meantime two evaluation studies were carried out and a final assessment is foreseen in 2008. The evaluation studies (SKO, 2005, 2006) indicated that the various tasks assigned to *lectores* cover a broad range of activities. There is a tendency to emphasise one or a few of the tasks. It seems that choices are made according to the individual preferences of the *lector* and depends on the actual position within a UAS, as well as a particular relationship with the professional field. Since the nature of the *lectorate* also differs between *lectores* within the same UAS, this indicates that priority setting is up to the decision of an individual *lector* and that a clear institutional strategy by most UASs is lacking.

This observation has led to the concern – also expressed by the OECD thematic review on the Netherlands (OECD, 2007) – that the process by which *lectores* are allocated broadly disperses the available resources. This limits the capacity to build a critical mass of sufficient depth and expertise for UASs to function more effectively as innovation partners for enterprises. One of the reasons for this is the fact that the average *lector* has no more than a 0.6–0.7 job, has no tenure but rather is appointed for a 4-year period, and as a rule has a 'knowledge circle' the total capacity of which does not exceed two FTEs. This relatively small scale of the *lectorate* is enforced by the fact that in the first round of assignments the UAS executives tended to disperse the number of *lector* places equally across the different departments as a form of distributive justice, which has led to a fragmentation of resources.

This picture, however, is changing rapidly as after the first 4-year period most UASs have moved to create more focus and critical mass. Several institutions are in the process of giving their research more profile and cluster their research activities around one principal or some well-defined knowledge domains or thematic areas. Some UASs have clustered their research in a number of research centres each with their own research programme. Other UASs have organised all their research in one central research centre in which all *lectores* and members of the *lectorate* participate. Such a clustering of the *lectorate* in larger centres strengthens the research profile of the institutions. It is expected that this will increase the visibility of research on (regionally) relevant thematic areas and create more opportunities for multidisciplinary research.

Collaboration with Industry and Universities

One of the objectives of the *lectorate* is to strengthen the external orientation of UASs and to contribute to the process of knowledge circulation. Employers have shown considerable interest in the *lectorate* which fits into the idea of the 'knowledge gateway'. Leading idea is that the UASs are not merely teaching institutions, but also gateways incorporating knowledge from outside and in their turn disseminate knowledge to professional organisations and SMEs. The *lectorate* is seen as a 'knowledge bridge' (Renique, 2003) which functions to reinforce the interface between education and enterprise. Examples are the creation of dynamic course trajectories whereby students alternate periods of study and work, and the monitoring

of innovations in the professional field which can be translated in education, design and development.

The position of the *lectorate* in the knowledge infrastructure shows a positive development. It appears that compared to some years ago there is more intensive collaboration through individual contacts, guest lectureships and collaboration in research projects. It turns out that about 80% of all *lectores* are in their fourth year involved in research projects in collaboration with industry or public institutions with a mean of five projects per *lector* (SKO, 2006).

There is also a growing rapprochement between UASs and universities both on the administrative and managerial levels and increasingly on education and research. An important development is the perceived necessity to upgrade the faculty of UASs and equip them with research skills. Since UASs have no right to grant doctoral degrees and neither do *lectores* have the *ius promovendi*, several UASs collaborate with universities to enable faculty members to pursue a doctoral degree. In most of these doctorate trajectories the *lector* functions as a daily supervisor and co-promoter, whereas a university professor takes the formal supervisor's role.

The collaboration between universities, UASs and other (applied) research institutions is also growing, mainly in the context of regional consortia in which (usually smaller) companies take part as well. These consortia aim to strengthen the research function of UASs and to disseminate research results in the context of application. While universities take care of the fundamental aspects of the research, the UASs are keen to convey practical results to the companies involved.

Human Resources and Careers

Until recently the *hogescholen* restricted their activities to undergraduate professional education, the sector mostly refrained from serious endeavours to raise the qualification levels of their faculty. Whereas the Dutch universities have since the 1980s put much effort in upgrading their faculties by increasing the number of PhD courses and setting the PhD level as a minimum requirement to enter the academic faculty, *hogescholen* have soldiered on with a teaching faculty which for 47% has a bachelor degree only (most of them at the UAS level) and (thus) no research qualifications whatsoever (Table 11.2).

Table 11.2 Educational level of academic staff in UASs and mobility in 2006 (%)

Educational level of UAS staff	Sitting	Inflow	Outflow
UAS bachelor	39.3	31.0	39.3
University-bachelor	7.4	7.3	11.4
University-master	45.8	55.8	45.0
University PhD	3.7	4.6	0.8
Other qualification	3.9	1.3	3.6
Sum	100	100	100

Source: Stichting Mobiliteitsfonds hbo (2007).

As the UASs were not supposed to build any research capacity, this has led – in conjuncture with a steady growing teaching load and increasing faculty to student ratios – to a lack of consistent investments in qualifications of academic staff.

The first experience with higher qualified and research-oriented professionals in the *lector* positions increased awareness among UAS executives about serious flaws in their human resources. Many *lectores* signalled that their attempts to set up research programmes, and their relations with the external professional networks, were in jeopardy should they have to work with sitting teaching faculty alone. Many 'knowledge circles' changed profoundly in composition over the first 2 years, with *lectores* insisting that they should be allowed to hire qualified researchers alongside sitting faculty. As a rule this was conceded to a certain degree, and most knowledge circles around the *lector* nowadays will encumber one or two researchers.

The percentages in Table 11.2 reflect the current debate on faculty quality as a prime policy issue for the UAS sector. It appears that there is a relatively lower proportion of the new faculty with a bachelor degree compared to those with a master's degree. Since the inflow of master's degree holders exceeds the outflow, and for the bachelor degrees the shift is the reverse, the proportion of master's will increase.

Nowadays UASs have considerable autonomy in defining academic staff positions. The most common term adopted by *hogescholen* is *hogeschooldocent.* Functional differentiation takes place according to four major salary scales (total teaching staff is about 15,000 in FTE). No exact figures of the distribution across the scales are available. The percentages are estimated on the basis of information from the HBO council:

- Scale 10 (the lowest) involves basic teaching and instruction (comprises about 15% of all academic staff)
- Scale 11 includes curriculum development (40%)
- Scale 12 adds the faculty roles of scale 11 plus coordinating and management roles regarding education (40%)
- Scale 13 and higher includes a research component (about 5%). This category includes the *lectores* which predominantly are in scale 16 and occasionally in scale 17.

The traditional universities have a ranking system, broadly equivalent to the three positions of assistant, associate and full professor. The corresponding figures are as follows (out of a total of 15,000 academic staff):

- Assistant professor: scale 11/12 (31% of all academic staff)
- Associate professor: scale 13/14 (15%)
- Full professor: scale 17/18 (16%)
- Other academic staff (38%), distributed across various salary ranks.

This comparison explains that the structure of positions at universities is more differentiated than at UASs, which on average, are substantially lower on the scale. Also the balance of faculty grades is rather distorted. While *lectores* in the UASs

should be seen as having the same academically leading position as university professors, they are not numerous enough to exert this leadership effectively. To every full-time *lector* Dutch UASs have roughly 56 teaching faculty and 1,400 students, while the universities have on average 10 faculty members and 100 students to every full-time professor (Ministry of OCW, 2007).

Many *hogescholen* are aware of this difference and are developing policies to differentiate mainly in the higher salary scales. Because of their extended research function, the larger UASs strive to increase the share of PhD's in the faculty from 3.7% now to 25% in 2020 (on average) and to make a master's degree the minimum requirement for access to junior staff positions. Programmes have been developed to create PhD trajectories for sitting and new academic staff, as well as personal development possibilities up to the master's level. New positions are defined to encompass teaching as well as research and require a minimum of research experience. These programmes receive a modest but conscious government support, also financially through 'promotion vouchers' to enable at least 80 faculty members to pursue a PhD trajectory. Most *hogescholen* now add part of their own budget to these government vouchers in order to raise the number of PhD trajectories. Starting point is that such trajectories result in a PhD degree that meets both the standard scientific qualifications and practice-oriented research. Several UASs have made agreements with universities as 'preferred partner' whereby the university professor is responsible for the quality of the doctoral programme and the research of the candidates is supervised by their own *lectores*. Such a construction combines the methodological expertise provided by universities and the practice-oriented research attitude in UASs. It is expected that this upgrading of the teachers in combination with their participation in the *lectorate* will contribute to a further professionalisation of the academic staff.

The Allocation of Resources for Research

The allocation of resources for research to UASs occurs mainly through the government budget for *lectorates*. Parallel to this SKO-funding the phenomenon of a *special lectorate* exists, funded by external partners from industry and public organisations. In addition, UASs may extend the number of lectores by funding them at least partly from their block grant. This happens increasingly, possibly anticipating the end of SKO-funding and the government budget will be allocated to the UASs directly as targeted part of the block grant. Thus, the allocation of resources for research is not solely dependent on external funding, but also part of the internal (strategic) decision-making.

The evaluation of the *lectorate* indicates that *lectores* are to a considerable extent able to attract members of the teaching staff into their research groups, mainly on a part-time and temporary basis. Their research time is determined mainly on the basis of individual agreements and their teaching load will be reduced correspondingly. It turns out that a substantial number of teaching staff (over 25%) have been involved in research projects, in curriculum innovation, professional development

and knowledge transfer (SKO, 2006). The gradual extension of the number of *lectores* entails that an increased number of academic staff will become member of a knowledge circle. Furthermore, many *lectorates* have experienced that the initial 0.2 appointments of faculty members to the research group is too weak to develop a real commitment to research given the day-to-day pressure from teaching obligations. Gradually, this has been stretched to on average 0.5 appointments for at least 2 or 3 years in order to build more sustainable research groups making 50–50 teaching-research appointment the preferred pattern for new UAS staff members.

As said before, there is a clear trend to concentrate research into research centres. These centres in their turn can propose to establish a new *lectorate* and to determine the number of faculty members in their centre and other organisational arrangements. This will lead to more streamlining between teaching and research, but this requires at the same time commitment to research programmes and an actual effort by the staff. This effort is financially compensated because the research programmes increasingly control their own budgets.

Research Performance in UASs

The Assessment and Output of Research

The question how research performance has to be assessed and how the output measured, has been subject of much thought and discussion. From the beginning, *hogescholen* took the view that the measurement of research output solely in terms of publications in refereed journals – as is common but not uncontested in university research – would do no justice to the specific character of UAS research. Since this research is practice-oriented, and aims to contribute to the innovative capacity of professionals, the views of stakeholders as to its relevance and applicability should constitute an essential part of the research assessment.

Regarding the research output, several indicators have been considered, such as number of institutes with which intensive exchange takes place, number of research projects, number of publications (scientific and/or professional) and the contribution to the education process and professional training.

Representatives from business, in particular, emphasise indicators that express the relevance for enterprises. These stakeholders feel that the number of publications in periodicals of sectors of industry or professions should be valued higher than publications in scientific journals (Renique, 2003). However, it is interesting to see that these two ways of knowledge dissemination do not necessarily contradict and that many *lectores* publish in both scientific and professional journals. A more clear-cut distinction seems to be between *lectores* who publish very little anyhow because their focus is on consultancy and *lectores* who concentrate on (long-term) practice-oriented research and publish their results in both scientific and professional journals. Figure 11.2 shows the various types of publications by *lectores* in the third year of their *lectorate*.

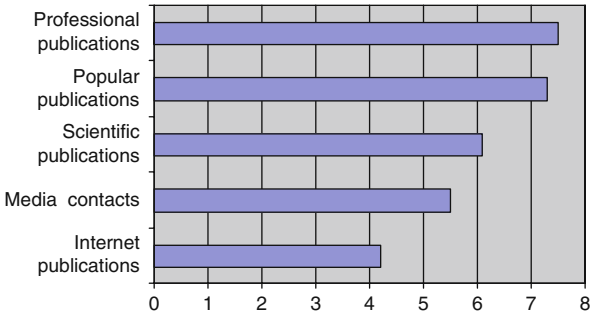

Fig. 11.2 Mean number of publications per lector (third year) by publication type
Source: SKO (2006).

Considering the variety of tasks assigned to the *lector*, it would be too limited to measure the success of *lectorates* on the basis of the number of publications alone. An overemphasis on publication behaviour would lose sight of the practice-oriented character of research and of the task of *lectores* to develop partnerships with industry in a practical sense, a point also mentioned in one of the first evaluations of the *lectorate* (SKO, 2005). However, although research at UASs encompasses a broader area of activities than university research, this does not imply that normal scientific criteria can be relinquished. On the contrary, the quality of practice-oriented research and its value to business and professional practice can only be assured if the method of knowledge acquisition complies with scientific quality requirements. If research does not meet current standards of scientific rigour, it is useful neither as practice-oriented nor as 'design research' since it produces no valid and reliable knowledge (Leijnse, Hulst, & Vroomans, 2007).

Also the requirement of generating new knowledge that is transferable to other contexts as well as the public character of research in order to utilise the outcomes in education and in professional practice is frequently mentioned as reasons for methodological rigour in research at UASs (Van Weert & Andriessen, 2005).

The Dutch UASs have agreed with a protocol for the entire sector that regulates quality assessment of research for the next 6 years. Basic idea is that research will be evaluated and validated by a special committee to be appointed by the HBO council in cooperation with the Dutch Ministry of Education. This committee will be formed by experts in research, education, business and the public sector. The assessment procedure starts from the quality assurance systems of the institutions and encompasses both the societal relevance and the scientific soundness of the research. Some UASs have already developed audit systems to assess their *lectorates* as a pilot for the coming national system. The (planned) national committee will mainly assess and certify (accredit) the audit systems of the UASs.

The Relevance of Research for the Regional Community

As mentioned before, the RAAK-programme (*Regional Action and Action for Knowledge Circulation*) aims to stimulate regional collaboration between UASs

and business. The leading idea of RAAK is that there is not a one-sided direction of knowledge utilisation, but that in regional networks various partners collaborate with a view on knowledge circulation and innovative outcomes. The programme aims to enhance the knowledge exchange between knowledge institutions and SMEs and their role in the regional knowledge infrastructure. Since 2006 RAAK has also a parallel public sector scheme.

Started in 2005 with nine projects, the RAAK-programme supported 81 regional innovation programmes in 2006, 66 of them with SMEs and 15 with public institutions. These programmes have to be submitted to consortia consisting of parties that agreed to collaborate for a longer period to stimulate knowledge exchange in the region. RAAK requires that in a consortium at least one UAS participates.

Furthermore, an intermediary body called *Syntens* has been established by the Ministry of Economic Affairs which aims to assist SMEs in their innovation capacity, to advise them on innovation projects and to facilitate the link between UASs and other applied research institutions.

From the start of the scheme it was decided to monitor the innovation projects regarding the functioning of the network, the sustainability, how SMEs articulate their demands and how the parties contribute to the stated objectives. It appears that the RAAK-programme is an effective way of bringing together different parties in the region. It positions the UAS as an important knowledge centre in the triangle of education, research and innovation.

The Future of Research in Dutch UASs

The development of Dutch UASs from mere teaching institutions to centres of expertise in the professions has made a modest start. The evaluation of the scant research endeavours of the *lectorate* so far (SKO, 2008) shows a rather positive outcome, both with regard to the quality of the research and its relevance for stakeholders as well as for professional education. On the other hand, the evaluation confirms the OECD's earlier observation that the *lectorate* is at present 'scarcely more than a drop in the ocean' (OECD, 2007). With proven and growing demand for applicable knowledge and innovation, the government will be under obvious pressure to increase the budget for *lectorates*, enabling the UASs to increase the number of *lectores* up to 800, roughly one *lector* to 20 teaching staff and 500 students.

At the same time a further extension of the budget for the 'second flow' of research funding, presently mainly in the RAAK-programme is to be expected. This aims to keep pace with the increase of the number of *lectorates* in order to facilitate long-term research projects and the building of a sustainable research infrastructure. This will in their turn enable UASs to attract more third party-funded research. The demand from professional communities and society at large for applicable knowledge and innovation is high and growing, and Dutch UASs may be praised for having positioned themselves as a prime object for this demand. They are also increasingly becoming an attractive partner for research groups from universities to cooperate with given the current emphasis on relevance and valorisation of

university research. This will bring *hogescholen* in a position to gradually increase the size of their research activities from a mere 4% at present to 10–15% of their total turnover in 2015 on average, although the differences between *hogescholen* may be substantial.

As practice-oriented research becomes more common within UASs, the construction of a sustainable long-term research infrastructure (programmes, dedicated human resources, funding) is on the agenda. The *hogescholen* will have to realise that to meet the needs of the profession and stakeholder expectations in the long run, an extended programme of short-term advisory and consultancy projects will not suffice. More thorough analyses and reflection are necessary and therefore research must become more 'scientific' in nature to produce more high-quality applicable knowledge (however, paradoxical this may sound in the tradition of the binary divide). The envisaged national quality assurance system for practice-oriented research may be a necessary instrument to set and sustain high standards. Nevertheless, a fair number of Dutch UASs will likely be unable to define and attain proper standards for their research infrastructure and activities and, therefore, may become stuck in the middle: their expertise will not exceed that of an average consultancy.

For Dutch UASs the main challenge will be to balance this imminent growth of research with their present culture and with their human resources. Traditionally, the Dutch UASs have a succinct teachers' culture. In this kind of culture, all activities have been valued in relation to their contribution to education. It is therefore understandable that from the beginning, the introduction of the *lectorate* was argued on the basis of its expected contribution to the quality of teachers and their teaching. Politically, this argument was all the more necessary to find a majority for this policy change. However, the idea that practice-oriented research in itself is a worthwhile activity of UASs has gained some ground, particularly among the professional stakeholders. The *hogescholen* themselves nevertheless still struggle to overcome the old teachers' culture and to view knowledge production as part of their core competence.

This is not to say that UASs must develop their research activities in a separate and independent institutional setting to 'insulate' them from the dominant teaching culture. In their endeavours to develop practice-oriented research, Dutch UASs maintain the relation of their growing research programmes with teaching. A *sine qua non* for this is the rise of a scholarly culture in which excellence in (practice-oriented) research and excellence in teaching are seen as intertwined. The metaphor of the classical *scholar* as being a great thinker and researcher and a great teacher at the same time – a 'master' in both senses of the word – could be closer to modern reflective professional practice than the metaphor of the modern scientist.

The other challenge regards the balance between the growth of research and the need to upgrade the qualifications of the academic staff. Although the executives seem to be fully aware of this challenge, and an aging faculty provides opportunities for renewal, effective HRM strategies and instruments are still lacking. Likewise, UASs should overcome the government policy to deny UASs some of the rights that are crucial for recognition as a serious institution for higher education, such

as the right to grant doctorates, to appoint professors and to grant these leading faculty members the *ius promovendi*. The persistence to deny these rights can be questioned in the light of the substantial graduate programmes and the extended research function of Dutch *hogescholen*.

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