This paper presents the findings from a study of industrial adjunct professors at two higher education institutions in Sweden. The aim of the study is to investigate the rationales and expectations for companies to invest time and money in the collaboration that adjunct professors represent. The study also explores the tasks adjunct professors are involved in. The study is a two-case study comprising 31 semi-structured interviews with university management, adjunct professors and their employers, the companies.

The results from the study show that the stakeholders have different expectations for the adjunct professors. While the companies are oriented towards education and students as future employees, the universities’ expectations are more related to research and research training. Notably, the different expectations are rarely explicit or known to the stakeholders or the adjunct professors. The adjunct professor has to interpret the often unspoken expectations.

As regards tasks, adjunct professors are involved in research, research training, advisory services and engineering education, although the latter in a limited way. They are involved in the employability agenda and educational collaboration, but except in one single case they do not develop existing, or create new, engineering curricula. The study concludes that adjunct professors could be used as a strategic resource for developing engineering curricula, provided that the expectations are expressed from all stakeholders from the beginning of the collaboration.

Keywords: adjunct professors; educational collaboration; engineering education curricula; knowledge transfer; university–business collaboration

In context

The position of adjunct professor was introduced into the Swedish academic system in 1983. In the areas of medicine and health and engineering science, they are quite common. Today there are approximately 550–600 adjunct professors in Sweden. In comparison, there are around 6,200 professors at Swedish higher education institutions (HEIs). Normally, the university does not pay any salary to the adjunct professors; the ordinary employer continues to pay full salary. Essentially, this is how the function of adjunct professor is financed. The time spent at the university differs, but is typically 20%, that is, 1 day a week.

This paper presents the findings from a study of industrial adjunct professors at two HEIs in Sweden. The aim of the study is to investigate the rationales and expectations for companies to invest time and money in the collaboration that adjunct professors represent.

The results from the study show that the stakeholders have different expectations on the adjunct professors. The different expectations are rarely outspoken and known to the stakeholders. The adjunct professor has to interpret the often unspoken expectations. As regards tasks, adjunct professors are involved in research, research training, advisory services and engineering education, although the latter in a limited way. The study concludes that adjunct professors could be used as a strategic resource for developing engineering curricula, provided that the expectations are expressed from all stakeholders from the beginning of the collaboration.
adjunct professor could possibly be seen as such. In Sweden, the adjunct professor typically is an experienced person who spends part of his or her workhours at a university while still being employed and remunerated by the original employer. Even though adjunct professors have been a part of the Swedish higher education system since 1983, there has not been, since 1992, a thorough assessment exercise or investigation about the function and role of adjunct professors and how they spend their time at the university. Furthermore, neither the companies’ expectations for the investment of time and money nor the universities’ expectations have been explored in a broader manner. Therefore, the aim of this study is to investigate the rationales and expectations for companies to invest time and money in this kind of collaboration and to ascertain what kind of outcomes they expect from adjunct professors. The study also explores the tasks adjunct professors are involved in.

**Theoretical background**

For years now, political light has been shed on collaboration between universities and companies, particularly within the discussion about the knowledge triangle (Maassen & Stensaker, 2010) and the so-called triple helix model (Etzkowitz & Leydesdorff, 2000). The discussion about university–business collaboration (UBC) has arguably been strong in Europe and the European Union, where the political ambition has been to enhance competitiveness in a global perspective. The assumption that collaboration between not only academia and business but also involving the government will improve conditions for innovation, productivity and prosperity is supported by a great deal of research (cf. Campbell, 2005; Etzkowitz, 2002). The three corners of the knowledge triangle (research, innovation and education) are supposed to support each other in order to enhance competitiveness within society.

The discussion about the triple helix model is in many ways a sequel to the concept of the entrepreneurial university (Etzkowitz, 1983; Etzkowitz, Webster, Gebhardt, & Terra, 2000). The entrepreneurial university has been suggested as a way to better meet the demands of an ever-changing external environment (Clark, 1998). While Etzkowitz framed the entrepreneurial university concept in an American context, with a market-driven and often privately funded environment, Clark tried the concept in the European context, characterised by governance and funding mainly by the state. Clark identified five common requirements necessary to transform a traditional university to an entrepreneurial university. A diversified funding base, including non-governmental funding, is one requirement. A second requirement is a strengthened steering core allowing for more flexible, fast and focused responses to changes in the environment. The development of organisation units in the periphery of the university is also a requirement. These could be technology transfer offices and science parks, and also interdisciplinary project-oriented research centres and so forth. The last two requirements concern the culture of the university and the ‘academic heartland’. The academic heartland, where traditional academic values are most prominent, must accept the transformation towards an entrepreneurial university and, at the same time, the whole organisation must welcome and embrace a work culture for these necessary changes. Viewed in the context of Clark’s concept and requirements for an entrepreneurial university, adjunct professors could arguably be seen as a way for universities to reach out to organisations outside its own sector and to facilitate a diversified funding base.

Over the past few years, many universities have recognised staff mobility as a way to increase knowledge transfer between academia and the surrounding society. Some universities have developed strategies addressing how this kind of collaboration and cooperation could strengthen the university. One example is KTH Royal Institute of Technology, which has set up a goal in its development plan for 2013–2016 to double the number of adjunct professors (KTH, 2013). Knowledge transfer and mobility of personnel are often discussed from the universities’ point of view, with the assumption that all knowledge is ‘produced’ at the universities and has to be transferred to society, called the Mode 1 as introduced by Gibbons et al. (1994). However, in the developed concept of Mode 2, it is rather referred to as technology interchange, instead of technology transfer. This interchange represents an interactive process between various stakeholders such as universities, engineers in businesses, capitalists, patent attorneys and so on.

The rationales for, and results of, UBC have been studied from many points of view. Some studies have even tried to find ‘best practices’ for UBC (cf. Pertuzé, Calder, Greitzer, & Lucas, 2010) or success factors in UBC with more focus on educational collaboration (Thune, 2011). While discussing activities and factors contributing to best practices for UBC, Pertuzé et al. (2010) divide these into human-related factors and structural factors. One of the structural success factors for UBC is the need for both the higher education institution (HEI) and the company to share their visions and goals with the collaboration. And connected, one of the human-related critical factors is people who move and/or communicate between the university and the company, ‘boundary spanners’ or technological gatekeepers as Allen (1977) calls them. Could the adjunct professor be seen as a special ‘instrument’ for UBC, and even as a ‘boundary spanner’? The form and function of the adjunct professor in the Swedish higher education system is described later in the article, but for now it can be concluded that the use of adjunct professors is supposed to be a way to transfer knowledge and co-create knowledge. This was also a conclusion from a study in 1992 on adjunct professors in Sweden (Castro Hidalgo, 1992).
An earlier study of rationales for businesses to collaborate with universities (Broström, 2012) identified four rationales. One rationale is the network in academia that such collaboration creates. Collaboration is also seen as a way to offer development of personnel and the recruitment of new talents. The last two rationales are related to expectations for new business opportunities and the development of new products and processes. These rationales mesh well with the main reasons for a company to allow a highly qualified employee to spend a part of his or her work time at a university, as stated in perhaps the only comparable study about adjunct professors done in recent years (Broström & Johansson, 2011). In this study, it is concluded that the three main rationales for this strong commitment in collaboration with the university are the following:

- Increasing capacity: the collaboration gives the organisation a stronger base for revivification and innovation through the academic network made available.
- Increasing competence: the collaboration helps the organisation to keep and develop key employees and to acquire valuable connections with the future workforce.
- Increasing knowledge: the collaboration facilitates knowledge transfer that helps ongoing or future innovation projects.

The first and the third reasons have obvious connections to an organisation’s internal research and innovation, while the second reason has a distinct connection to education at the university.

In a recent research review on educational collaboration, Bengtsson (2013) concluded that higher education is more valuable to the society than research carried out at universities. This is due to the well-educated students graduating from the universities and thus increasing society’s competitiveness and innovativeness (Mowery & Sampat, 2005).

The research review (Bengtsson, 2013) describes a useful categorisation of different types of educational collaborations, derived from a Norwegian report (Brandt et al., 2008). Three types of educational collaborations, which partially overlap each other, are described:

- Collaboration with the aim to develop or create new education
- Collaboration with the aim to be a part of the teaching and learning process
- Collaboration with the aim to ease students’ transfer from education to working life

This study focuses on the first of the three categories of educational collaboration, although all three have been touched upon in many of the interviews. The model with the three categories has been used as a framework in the analysis of the collected data.

An outcome of the Bologna Process on the educational system in Europe has been a reinforced focus on employability. An employability agenda or employability drift that includes skills and competences for the labour market implicates a developed and increased collaboration between academia and business. Indeed, there have been different ways through which universities have reached out to companies within the educational system, such as promoting internships, company projects and so on, to enhance employability (Graham, 2012; Royal Academy of Engineering, 2007, 2010; Tymon, 2011). The adjunct professor could clearly be seen as a proof of a developed collaboration, but perhaps not necessarily as a part of the employability agenda.

At the same time, there is a somewhat contradictory trend called academic drift occurring in academia, especially within fields with a more vocational educational tradition, such as engineering (Kyvik, 2009) and midwifery (Hermansson, 2003). Academic drift has been used to describe a process whereby knowledge that is intended to be useful for the society gradually loses its ties to practice and becomes more integrated with scientific knowledge (Harwood, 2010). Sometimes academic drift is analysed through external stakeholders’ view on graduated students from a certain type of education (structural academic drift) and sometimes it is analysed through faculty staff’s desire to become more research-oriented, thus gaining points in an academic qualification race (personal academic drift) (Delahousse & Bomke, 2015).

To conclude, there is a wide range of previous research on UBC, knowledge transfer, employability, academic drift and similar subjects, but not so much on educational collaboration and probably only one regarding adjunct professors in Sweden (Castro Hidalgo, 1992). This is somewhat startling since the function of adjunct professor was introduced in the Swedish higher education system more than 30 years ago. This study tests these theories about the adjunct professors and elaborates the reasons and expectations the stakeholders, especially the adjunct professors’ employers, have for this commitment for such a strong collaboration. The model of educational collaboration described earlier is of special interest, not least because higher education is said to be more valuable for society than research (cf. Bengtsson, 2013).

**The form and function of the adjunct professor in Sweden**

**The history of the adjunct professor in Sweden**

The position of adjunct professor was introduced into the Swedish academic system in 1983. The introduction was preceded by many years of investigations, surveys, proposals...
and even a tryout period. Two Swedish Government Official Reports in the 1950s and the 1960s (Swedish Government Official Reports, 1958, 1966) anticipated an expansion of the higher education system in Sweden, and also stated that this expansion would be very difficult to implement with the material resources and personnel resources available. Doctoral education was identified as a key for successful expansion and, in order to do an inventory of possible extra resources for PhD supervision outside academia, a survey was conducted with around 75 companies and research institutes. The results from the survey showed that suitable personnel resources outside academia were available to a ‘considerable extent’ and, if used, could allow an expansion of higher education in Sweden (Richardson, 1989). It was proposed that these external resources could be transformed into the academic system by experienced researchers outside academia who would be employed part-time by the universities. The competence requirements would be the same as for a full professor and the title, during the proposed limited assignment time, would be professor (UKÄ, 1971). In the mid-1970s, the position of adjunct professor was first introduced on a tryout basis and, from 1983, on a regular basis.

The role and function of the adjunct professor was inspired by a similar system in the Netherlands. A fruitful cooperation between technical universities and industries with advanced research had been developed, and an important part of this cooperation was that experienced researchers from industry spent part of their time at a university (Richardson, 1989).

The role and function of adjunct professors in Sweden today

Since the beginning, the areas of medicine and health and engineering science have dominated the numbers of adjunct professors (Richardson, 1989). Today there are approximately 550–600 adjunct professors in Sweden (Reitberger & Sittenfeld, 2011; SUHF, 2013). Of those, nearly 300 are adjunct professors in the area of natural and engineering sciences (see Fig. 1). In comparison, there are around 6,200 professors at Swedish HEIs (SCB, 2014).

An adjunct professor is appointed and employed by the university for a limited period of time, not exceeding 12 years (‘Höskoleförordningen’ [The Higher Education Ordinance], 2014). Typically, the university does not remunerate the adjunct professor; the regular employer continues to pay the full salary. Essentially, this is how the function of the adjunct professor is financed.

The amount of time spent at the university differs for adjunct professors, but is usually between 20 and 50%, typically 20%, that is, on average 1 day a week. Having said that, an adjunct professor appointed for a period of 3 years, which seems to be the standard for the first tenure, would contribute 0.6 man-year to the university’s resources.

The original purpose of the adjunct professor – to strengthen doctoral education – had seemingly already drifted towards more research during the tryout time in the mid-1970s (Richardson, 1989). However, a study from 1992 (Castro Hidalgo) found that adjunct professors were involved in all sorts of academic activities, of which supervising doctoral students was one of the most prominent activities. The first statement implies an academic drift (Delahousse & Bomke, 2015; Harwood, 2010) of the adjunct professor, even before it was decided to implement the function on a regular basis in 1983, while the latter statement indicates that the function of the adjunct professor worked as intended at the time of the study in 1992.

The study by Castro Hidalgo (1992) was aimed at investigating whether adjunct professors could be seen as

![Fig. 1. The numbers of adjunct professors at Swedish higher education institutions per area of science (SUHF, 2013).](image-url)
the first steps in the development of a new type of university, the ‘other’ university, parallel to the existing one. This ‘other’ university, as assumed by Castro Hidalgo, would be developed and run by the technology industry together with state organisations such as research institutes, where there is a natural and constant need for new knowledge. A sign of the time was that companies and research institutes initiated advanced internal courses, and sometimes even packages of courses. The adjunct professors could, in Castro Hidalgo’s study, be seen as a way to build bridges for the transfer of new knowledge between these two different university ‘worlds’.

**Method**

The aim of the study is to investigate the rationales and expectations for companies to invest time and money in as deep a collaboration as the adjunct professors represent. The study also highlights the individual perspective, including the balance of work for adjunct professors and their preferences and ambitions with this collaborative role. The main research questions to be answered are the following:

- What are the expected outcomes for companies and adjunct professors, respectively?
- What academic tasks are adjunct professors involved in?

The study is a two-case interview study comprising 31 semi-structured interviews at two HEIs. The choice of sample for the study was made in two steps. Firstly, two HEIs which have actively worked with the affiliated faculty were chosen. The purpose for the two HEI cases was both to enable comparison and to differentiate between interviews from the two HEIs. Secondly, in order to obtain a diversified group of interviews, we used a combination of snowball sample and purposeful sample (Richard & Morse, 2012) to select adjunct professors for interview at the chosen HEIs. Furthermore, as an extra factor in the choice of data sample, the companies and organisations where the adjunct professors have their main employment were of interest to interview.

The choice of universities in the study was made by a purposeful sample (Richard & Morse, 2012). The first HEI case concerns a large research-intensive technical university that has upgraded its collaboration with the surrounding community and the adjunct professors are an important part of this strategy. The second HEI case involves a younger university college that would like to be renowned as a university college that thrives on close cooperation with the surrounding community, labelling itself as ‘the coproducing university’. As a relatively small, but growing, university college, they use part-time employees, for example, in cooperation with companies, as a way to build and expand their research and education. The university college conducts education and research in several academic fields. This study, however, was undertaken in the technological departments only, thus enabling a comparison between the cases.

Furthermore, there are companies collaborating with both of the selected HEIs, which made it even more interesting to select them for this study. People in management positions at the selected companies involved in these collaborations are included in the study. The HEI management was represented by individuals at different levels in the organisation: vice chancellor, pro-vice chancellor, dean of schools and pro-dean of schools. To sum up, 31 interviews were conducted (see Table 1).

All informants in the study can be said to be in a leading position within their respective fields and functions; hence, the interviews should be considered as elite interviews (Kvale & Brinkmann, 2009). This also justifies the initial literature review of both research and policy documents as a way to build the prior understanding necessary for elite interviews.

The data collection was made through semi-structured elite interviews (Kvale & Brinkmann, 2009; Richard & Morse, 2012). Themes in the interviews were as follows:

- Expectations from the stakeholders for the adjunct professor
- Expectations from the adjunct professor personally
- The actual work situation for the adjunct professor
- The interest or intention to develop engineering curriculum

The interviews were transcribed and analysed with respect to content. The transcriptions were coded according to the themes in the interviews and then analysed. The content analysis aimed to find a meaning and a pattern in what had been said in the interviews (Krippendorff, 2012), rather than a focus on the language. All citations that follow are translations made by the authors from the transcribed interviews.

**Results**

**Expectations**

What kind of expectations do the companies have for the adjunct professors? In this study, this is mainly interpreted by the adjunct professor himself or herself. What kind of expectations did your company have for your affiliation?

**Table 1.** Categorisation of the interviews

|                     | HEI 1 | HEI 2 |
|---------------------|-------|-------|
| HEI management      | 8     | 4     |
| Adjunct professors  | 11 (63\(^a\)) | 3 (12\(^b\)) |
| Company management  | 4     | 1     |

\(^a\)Total number of adjunct professors at the HEI at the time of the study.
Did you bring along a certain mission when you entered the university? In many ways, this is related to how the affiliation was initiated. About two-thirds of the adjunct professors in this study had their affiliations at the HEI initiated by the HEI, thus indicating that the adjunct professor in fact is not a perfect example of an instrument for UBC that has derived from a company initiative. In those cases where the HEI took the first step, there were either no or vague explicit expectations from the company about what they wanted the adjunct professor to do with the time at the university.

There was no specific mission, but I rather think that I was supposed to understand what to do. Supervise master thesis, supervise postgraduate students, come up with some ideas, join a few projects, well, like, a little bit of this and a little bit of that. Adj. Prof no. 3, HEI 1

However, when the affiliation was initiated by the company, or, as in a couple of cases, the affiliation was more or less inherited, the expectations and the mission from the company were much more explicit and precise. By ‘inherited’, we mean that a company had already an adjunct professor at the university and when the assignment ran out, a new person from the same company more or less took over the same role. The formal procedure for the new person to become an adjunct professor is in these cases, of course, the same as for everyone else, but the role and the mission for the affiliation is clearer from the start.

Well, it was very easy because I just continued on the same pathway (as my predecessor). Adj. Prof no. 2, HEI 1

When the HEIs talk about expectations, they most often discuss these in terms of research, and never in terms of education, with only one exception. This research could be in the form of writing papers or in the form of supervising PhD students or, as in some cases, in the form of developing new research projects. They also sometimes speak about the adjunct professor as a ‘good ambassador’ or as a person who can justify the industrial relevance of a certain research area or research project. However, these expectations from the HEI are not expressed to the adjunct professor; he or she very seldom perceives a clear mission from the HEI with the assignment as an adjunct professor. It is very unusual to have a written agreement about the expected outcome of the assignment.

The companies, though, want the assignments to be more than ‘only’ research or supervising postgraduate students. A desire for a new or expanded network and closeness to the technological forefront is shared by the HEIs and the companies. But the companies first and foremost want to be close to students and notably have an impact on engineering education. Many of the adjunct professors pick up this expectation from the company and bring with them an implicit or explicit mandate to establish contact with the best students for future recruitment.

I’m not particularly interested in one of our experts sitting in a room at the university just doing research. I mean, they should be there and network with others and find out what the technology forefront is right now or teach and demonstrate (the company) for the students, show the reality. In the end, it’s all about recruiting for us; they should have a number of people they can say that we should have or that we should not have. That’s what I want to see. If they just sit one day a week and doing research, I’m not interested; then they might as well be here. But I realise that we’re not there yet. Company management no. 1

The adjunct professors’ own expectations of what the appointment should mean vary, but common for many, regardless of the HEI, is an expectation to be able to delve into subjects they do not have time for in their ordinary work. The appointment as an adjunct professor presents an opportunity to develop and improve their skills, and to immerse themselves or to gain a new perspective on their ordinary work. It provides time to stop and think on a long-term basis. They also emphasise the intellectual stimulation and satisfaction derived from having one foot in academia, and thus they feel the obligation to act as a messenger of both industrial and academic needs.

Roles and tasks of an adjunct professor

As indicated earlier, there is no recent study on how adjunct professors spend their time at the HEIs. The adjunct professor usually spends 20%, or 1 day a week, at the university. So how does the actual workload situation look like? Almost all of the adjunct professors in this study are involved in academic core business, teaching and research, mainly through supervising PhD students, lecturing and doing their own research. However, more roles emerge in the interviews. In fact, a majority of the adjunct professors also spend a part of their time facilitating contacts between the HEI and the company, building and maintaining valuable networks, being involved in strategic discussions at the HEI and so forth. The latter applies in particular to adjunct professors with a management position in their organisation.

A large part of my time is spent on supervising Ph.D. students. The main part of my time here, I would say. Another part is to establish this network in Quality Management. Adj. Prof no. 2, HEI 2

The role and the assignments have usually been established over time; they were not fixed from the start. As indicated earlier, the three stakeholders (i.e. the HEI, the company and
the adjunct professor) seldom have a written agreement about the expectations. In fact, they have rarely even talked about it before the assignment as an adjunct professor. However, the adjunct professors in the study were satisfied with how the situation had emerged, and felt they had a great deal of influence on the emergence of the assignments. As we shall see, the lack of outspoken expectations from the stakeholders is one of the reasons for this.

It has become what it is today, more or less by a day-by-day development, it wasn’t set from the beginning. I am satisfied with the assignments I have and can control them pretty well myself. Adj. Prof no. 6, HEI 1

The adjunct professor often has higher aspirations about what to do with the (limited) time at the HEI than the available time; there is rather a cutback on aspirations along the way. A common area where time is said to be the limitation is education. Even though the adjunct professors are involved in education at the bachelor’s and master’s levels, mainly through guest lectures, this is the area where they want to expand their assignment, if time were not such an obstacle. In fact, nine of the 14 interviewees expressed this desire to contribute more to the educational part of academia. The reason for this interest in education seems to be a mix of a genuine interest in education and a desire to contribute and, at the same time, an interpreted expectation from their company to be closer to the students.

I would actually like to work more with education. I think it’s a really important task. But for now, there’s no time for that. But that’s a development I really want to do, and give something else up . . . Either as a guest lecturer, or, as I have suggested, being involved in the development of a course. To add an external perspective in a course. Adj. Prof no. 1, HEI 1

However, when we asked people at lower managerial levels at the two HEIs about the possibility of using adjunct professors in the development of education, they all seemed to have never thought of it.

Well, that would perhaps be a possibility. You mean at the program level? Hmm. That might be possible. Though maybe I can’t see how it would work right now. Management no. 8, HEI 1

At one of the HEIs in the study, there is an exception to the lack of involvement by adjunct professors in the development of education. One adjunct professor at the HEI has one single mission – to develop a new education program at the master’s level. The initiative came from the HEI, but the company has a strong incentive to be a part of this; they have a need for these skills. Even though the company would rather have this new education to take place at a university closer to the company’s location, it had no problem in allowing the employed expert spend 1 day a week doing this development work.

At the same time, there is a fine balance between education for a common purpose and education that more or less suits one or a few companies. One of the HEIs recognised this by saying:

We have to decide for ourselves what we do, so to speak. Sometimes there’s a discussion that they (the companies) want us to establish a certain (education or course) . . . We must protect that, so we don’t sell ourselves. Management no. 1, HEI 1

Lastly, one company expressed the idea that if you are part of the research at the HEI and the development of research, you can also have an impact on the education, even though it is a much longer time frame than being directly involved in curricula development.

Discussion
A first conclusion of the interviews is that there is very little or no difference between the two HEIs and their thinking about the adjunct professors. Both have an overall expectation that adjunct professors are part of (in one sense an instrument) an increased cooperation with the surrounding society, as good ambassadors, networkers and a means to test the industrial relevance of their research and hopefully to bring in more funding – much like the ‘boundary spanner’ that Pertuzé et al. (2010) set up as a success factor for UBC. One of the other success factors for UBC as listed by Pertuzé et al., however, is the necessity for the HEI and the company to share their visions and expectations of the collaboration. In that sense, this study shows that adjunct professors and the collaboration they represent do not conform to the best practices model of UBC by Pertuzé et al. However, the adjunct professors, in their role as networkers and boundary spanners, can fulfil two of Clark’s (1998) five requirements for a university in its attempt to transform into an entrepreneurial university, that is, to reach out to organisations outside its own sector and to facilitate a diversified funding base.

The companies have a similar, uniform view on expectations. However, it is a different view on expectations than the HEIs. The companies emphasise education and closeness to students. By saying this, this study confirms primarily one of the three rationales from the study from KTH Royal Institute of Technology about adjunct professors (Broström & Johansson, 2011): the collaboration helps the organisation to keep and develop key employees and acquire valuable connections with the future workforce. Our study also confirms to an extent one of the other rationales from that report: the expectation that an academic network would give the company a stronger base for revivification and innovation. In brief, the company wants the adjunct
professor to have a part in all three aspects of the knowledge triangle: innovation, research and education.

As shown in this study, the adjunct professors’ own expectations differ widely, even though a common aspect for many is the opportunity for personal development, again supplementing one of the rationales from the internal report from KTH Royal Institute of Technology.

Can the varying expectations from the different stakeholders ever meet? Have they perhaps already met? The university benefits from a person who can contribute with a little bit of everything depending on a combination of what is needed at the moment and the competence and capacity of the adjunct professor. The company benefits from a deepened collaboration with the university and, hopefully along the way, a closer relation to their future workforce, the engineers. The adjunct professor seems to be able to manage all this and, as a token, enjoys a competence boost, and perhaps even a confidence boost. But it would probably not hurt if the expectations were made clearer from the very beginning.

When the position of adjunct professor was introduced into the Swedish higher education system in 1983, the original purpose – to strengthen postgraduate education and thus be part of an expanding higher education system – had reportedly already drifted towards more research (Richardson, 1989). This academic drift has in fact not been confirmed in this study, although it was not focused on in the analysis. On the contrary, the adjunct professor seems to be part of both research and education, although research predominates. We therefore conclude that adjunct professors can be seen as a way for an HEI to strengthen and even expand both research and education. These findings are more aligned with those from the Castro Hidalgo study (1992). One common task in education for many adjunct professors is to give guest lectures, with the aim of providing a taste of life after graduation. And many of the adjunct professors in the study connect students with their company in order to set up master theses and other collaborations at the student level. In this regard, the adjunct professor is a part of the employability drift that is on the rise in Europe through a political ambition emphasised in, for example, the Bologna Process.

Using the model on educational collaboration by Bengtsson (2013), the adjunct professors’ involvement in education is focused on being a part of the teaching and learning process, through guest lectures and master theses. However, the contribution in these lectures and master theses is expected to be about life after graduation, at least in part. Hence, they are also involved in collaboration with the aim of easing students’ transition to working life. As seen in this study, this is mainly the result of the educational collaboration, even though a few of the adjunct professors have been involved in curriculum development. A limitation of this study is the lack of analysis of this kind of educational collaboration and how the often unique experience and expertise that the adjunct professor possesses could be used to innovate engineering education.

Even though the companies express a desire to find good students within the existing curricula, to develop the curricula to better suit their needs seems far-fetched for the companies in this study. And doing this through the adjunct professor seems surprisingly even more far-fetched. The educational collaboration that aims to create new or develop existing education seems to be the most long-term and deep educational collaboration and, at the same time, the least developed form of collaboration.

The exception with the one adjunct professor whose only assignment is to develop a new education program makes an interesting case that could deserve further analysis beyond this study. In this study, it stands out as an exception, but it would be interesting to see if the project is successful and if it could function as a role model for other collaborations in education. At this stage, it is worth noting that the initiative of this assignment came from the HEI, not the company.

Interestingly, neither of the two HEIs can see a role for the adjunct professors in developing engineering education curricula, except for the above-mentioned example. The companies would indeed like to influence the education and see the adjunct professor as one way of doing it, but more through the normal ‘production’, that is, researching, supervising and teaching, and not in developing curricula. A conclusion is that the HEIs do not see adjunct professors as a strategic resource for developing engineering education curricula, and neither do the companies.

As mentioned earlier, it is not possible to make any comparisons with earlier studies on adjunct professors in Sweden on this matter, as there is hardly anyone to compare with. The study by Castro Hidalgo (1992) did not elaborate on educational collaboration at all, for example. This could perhaps be seen as a result in itself; perhaps there was no educational collaboration to investigate. And even though in this study we can see an interest in educational matters from the different stakeholders, there is clearly room for development. The prerequisites for ‘best practices’ and success factors in UBC as discussed by Pertuzé et al. (2010) and Thune (2011) are in part fulfilled as seen above, but there remains room for more development.

As we have seen, many of the adjunct professors want to be more involved in engineering education, not only as lecturers and supervisors but also as curriculum developers. Hence, there is a potential for using the adjunct professor as a strategic resource for this, but it is not used today. However, with the limited time as adjunct professor and often reduced ambition along the way, it is probably not wise to put another assignment on top of the others, at least not for the adjunct professors within the HEI system today. For the next generation of adjunct professors,
however, this would be a way to develop the role. In so doing, the expectations of this deep collaboration from the companies and the adjunct professors would probably have a better chance of fulfilment. The question remains whether the HEIs are ready to take that step and let adjunct professors, and by that the companies, be active and strategic partners in educational collaboration. And would the companies appreciate and fulfill such deepened educational collaboration through the adjunct professor? In brief, adjunct professors represent a resource that is expended, but perhaps not expediently spent due to the stakeholders' different expectations.

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References

Allen, T.J. (1977). Managing the flow of technology: Technology transfer and the dissemination of technological information within the R&D organization. Cambridge, MA: The Massachusetts Institute of Technology.

Bengtsson, L. (2013). Utbildningsamverkan – för jobb, innovation och företagande. Stockholm, Sweden: Almega.

Brandt, E., Dæhlen, M., Hagen, A., Hertzberg, D., Kaloudis, A., Seip, Å.A., . . . Vabo, A. (2008). Effekter av samarbeid mellom høyere utdanning og arbeidsliv–en forstudie. Oslo: Fako. 11.

Broström, A. (2012). Firms’ rationales for interaction with research universities and the principles for public co-funding. The Journal of Technology Transfer, 37(3), 313–329. doi: http://dx.doi.org/10.1007/s10961-010-9177-4

Broström, A., & Johansson, E. (2011). KTH: s adjungerade professorer. Stockholm, Sweden: KTH.

Campbell, D. F. J. (2005). The university/business research networks in science and technology: knowledge production trends in the United States, European Union and Japan. In E.G. Carayannis & D. F. J. Campbell (Eds.), Knowledge creation, diffusion, and use in innovation networks and knowledge clusters. (pp. 67–100). London: Praeger.

Castro Hidalgo, A. (1992). Det traditionella och det ‘andra’ universitetet: En början till samspel? (PhD thesis, Acta Universitatis Upsaliensis, Upsala). Upsala Studies in Education 44.

Clark, B.R. (1998). Creating entrepreneurial universities: Organizational pathways of transformation. Oxford: Pergamon.

Delahousse, B., & Bomke, W. (2015). Structural transformations in higher engineering education in Europe. In S.H. Christensen, C. Didier, A. Jamison, M. Meganck, C. Mitcham, & B. Newberry (Eds.), International perspectives on engineering education: Engineering education and practice in context (Vol. 1, p. 71–94). Dordrecht: Springer.

Etzkowitz, H. (1983). Entrepreneurial scientists and entrepreneurial universities in American academic science. Minerva, 21(2), 198–233.

Etzkowitz, H. (2002). Networks of innovation: Science, technology and development in the triple helix era. International Journal of Technology Management & Sustainable Development, 1(1), 7–20.

Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: From national systems and ‘mode 2’ to a triple helix of university–industry–government relations. Research Policy, 29(2), 109–123. doi: http://dx.doi.org/10.1016/S0048-7333(99)00055-4

Etzkowitz, H., Webster, A., Gebhardt, C., & Terra, B.R.C. (2000). The future of the university and the university of the future: Evolution of ivory tower to entrepreneurial paradigm. Research Policy, 29(2), 313–330.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). The new production of knowledge: The dynamics of science and research in contemporary societies. London: Sage.

Graham, R. (2012). Achieving excellence in engineering education: The ingredients of successful change. London, UK: Royal Academy of Engineering.

Harwood, J. (2010). Understanding academic drift: On the institutional dynamics of higher technical and professional education. Minerva, 48(4), 413–427. doi: http://dx.doi.org/10.1007/s11024-010-9156-9

Herrmannson, E. (2003). Akademiserings och professionalisering – barnmorskans utbildning i förändring (Doctoral dissertation). University of Gothenburg, Göteborg.

Högskoleförordningen (The Higher Education Ordinance). (2014). § Chapter 4 §11, 1993:100 Stat. Ministry of Education and Research.

Krippendorff, K. (2012). Content analysis: An introduction to its methodology. London: Sage.

KTH. (2013). Strategic plan 2013–2016. Stockholm, Sweden: KTH.

Kvale, S., & Brinkmann, S. (2009). Interviews: Learning the craft of qualitative research interviewing. London: Sage.

Kyvik, S. (2009). The dynamics of change in higher education. Dordrecht: Springer.

Maassen, P., & Stensaker, B. (2010). The knowledge triangle. European higher education policy logics and policy implications. Higher Education, 61(6), 757–769. doi: http://dx.doi.org/10.1007/s10734-010-9360-4

Mowery, D.C., & Sampat, B.N. (2005). Universities in national innovation systems. In: J. Fagerberg & D.C. Mowery (Eds.), The Oxford handbook of innovation (p. 209–239). Oxford: Oxford University Press.

Pertuzé, J.A., Calder, E.S., Greitzer, E.M., & Lucas, W.A. (2010). Best practices for industry–university collaboration. MIT Sloan Management Review, 51(4), 83–90.

Reitberger, G., & Sittenfeld, J. (2011). Kunskapsbyte genom personomländan mellan akademi och näringsliv. Stockholm, Sweden: Industrikommittén.

Richard, L., & Morse, J. (2012). Readme first for a user’s guide to qualitative methods. London: Sage.

Richardson, G. (1989). Ten ingredients of successful change. London: Sage.

Richardson, G. (1989). The dynamics of change in higher education. Dordrecht: Springer.

Maassen, P., & Stensaker, B. (2010). The knowledge triangle. European higher education policy logics and policy implications. Higher Education, 61(6), 757–769. doi: http://dx.doi.org/10.1007/s10734-010-9360-4

Mowery, D.C., & Sampat, B.N. (2005). Universities in national innovation systems. In: J. Fagerberg & D.C. Mowery (Eds.), The Oxford handbook of innovation (p. 209–239). Oxford: Oxford University Press.

Pertuzé, J.A., Calder, E.S., Greitzer, E.M., & Lucas, W.A. (2010). Best practices for industry–university collaboration. MIT Sloan Management Review, 51(4), 83–90.

Reitberger, G., & Sittenfeld, J. (2011). Kunskapsbyte genom personomländan mellan akademi och näringsliv. Stockholm, Sweden: Industrikommittén.

Richard, L., & Morse, J. (2012). Readme first for a user’s guide to qualitative methods. London: Sage.

Richardson, G. (1989). Ten ingredients of successful change. London: Sage.

Richardson, G. (1989). The dynamics of change in higher education. Dordrecht: Springer.

Tymon, A. (2011). The student perspective on employability. Studies in Higher Education, 36(6), 841–856. doi: http://dx.doi.org/10.1080/03075079.2011.604408

UKÄ. (1971). PM 2013-06-26. Stockholm, Sweden: SCB.