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University Industry Collaboration (UIC) and the new role of universities

Are clusters the answer?

1. Introduction: The issue addresses in this paper

Universities' role in society is at present up for discussion. Both society and industry want more "value for money", i.e. they want research results that can be used for innovation, economic growth, job creation, technological development and so forth, and they want degree programmes that produce masters students who gain employment.

This points to a more hierarchical structure in research organisations. Universities mostly have been driven by the old Humboltian ideal (Scott 1993, Nybom 2003) where the scientific community itself decides which degrees and research topics, methods and theories are important, and emphasizes basic research, even if it is not immediately useful. Research is individual and the researchers should be free to select their research area. The argument is that this ideal is most beneficial to society in the long run.

Thus there is a conflict of expectations or ideals for universities and it creates a cross pressure that the employees in particular feel. This raises the following questions: Should universities collaborate with industry? If so, will that not be the end of free science and make scientists dependent on industry? What are the advantages for universities and researchers?

Here I argue that University Industry Collaboration (UIC) can be useful for basic research, industry and society. However, a lot of impediments need to be removed to exploit the potentials fully.

This paper argues for the utility of UIC for both universities and industry based on my personal comprehensive experiences with UIC in different forms. Internationally (or at least in Europe) it has been suggested that clusters are the best way to organise UICs (Karlsson et al. 2014). Clusters are networks of researchers/universities, firms and change agents aiming to bring research knowledge from universities to firms so as to create innovations in firms. I will discuss whether such clusters are the answer to the question of how UICs are most properly organised.

2. The point of departure for the discussion: Two opposite views of universities' role and usefulness

Two opposite ideal views on the current situation can be identified which leads to a question of which one is best or, if neither are satisfactory, is there a third way? Thus three approaches may be identified. The first defends the Humboltian ideal. The second argues that the Humboltian ideal is coming to an end for internal reasons that is it cannot fulfil its own goals any longer. Whilst the third one states that the Humboltian ideal and the new practice oriented ideal may create a symbiosis and support each other.

The Humboltian university must be defended

The Humboltian university should be defended including what could be called intellectualism – the researchers' right to free intellectual and/or theoretical thinking. This is a crucial feature of the Humboltian university.

The Humboltian university ideal has had its day

A radical idea would be that science and the Humboltian ideal have nothing more to offer society. Science is not the way in which we can solve the society's great problems. Has cancer been cured? Have wars been prevented? Are people happy? Science has not provided the solutions.

This is of course a radical view that may seem very extreme and almost heretical. Abandonment of science is not a development that is just before us; however, even some scientists have started discussing whether science in a long term perspective might have had its day (e.g. Stannard 2010).

A more moderate version of this claim is that universities have become more research oriented and less abstract, i.e. the conditions for pure theoretical discussions have deteriorated.

Recently we have heard arguments maintaining that universities should provide greater support for entrepreneurship both in terms of the degrees they offer and in their research activities. Entrepreneurship is different from the scientific tradition. Entrepreneurship is oriented towards action, science is oriented towards analysing and being sure that one is right before one acts. This also makes entrepreneurship different from the Humboltian ideal.

A third way

One may emphasize some views that modify this polarised picture of the situation - a third standpoint.

The third way has been ideally conceptualised as mode 2 research (Nowotny, Scott and Gibbons 2001), a university ideal that has spread over the last couple of decades. Mode 2 means that research is carried out in collaboration with external stakeholders. Researchers both aim to solve stakeholders' problems and provide new general scientific knowledge. Thus research can be both basic, independent of industry or societal issues, and made in cooperation with firms and other actors in society with the purpose of solving concrete problems. These two aspects of research can be mutually beneficial.

Collaboration has always existed. Engineering schools (now technical universities) and agriculture universities were established to collaborate with industry. Within medicine, universities' research has always been connected to practice in hospitals and even collaboration with the pharmaceutical industry. Economists (and to some degree political scientists) have (at least in some countries) had close connections to governments and some ministries, and have clearly aimed to influence economic policy. Within sociology, the 1970s saw the emergence of the action research movement, which argues that researchers should take a political position and support oppressed social groups (Negt 1971).

Based on the third view, it can be argued that UIC and academia-industry links can be positive both for industry profits and also for researchers and their basic research. The aim then would be to cultivate this relationship. Doing so requires that scientists gain a specific and perhaps different approach to UIC. If UIC is not only seen as the dissemination of results and practical consultancy without any interest for basic research, but as a possibility for finding new issues for basic research, then it has positive outcomes for basic research.

3. The utility of and impediments to UIC

The basis for this evaluation

This section will aim at summarising the utility of and impediments to UIC based on my experiences in different UIC activities. My background for this discussion is that I am a researcher within business administration (educated as a sociologist). My research field is innovation and entrepreneurship from an organisational and management perspective and I am the leader of a research group called Innovation in Services and Experience. I have comprehensive experience of

collaborating with firms, trade associations, unions and industry related political organisations (for example ministries and regional administrations). I have participated in, and have been a board member of, several innovation networks that have had UIC as their main purpose. I have been co-director of my university's unit for UIC. Furthermore I have been a member of different commissions including the Danish Industrial PhD commission.

The utility of UIC

Below is a summary of my evaluation of the UICs that I have been involved in:

Why UICs can be useful to scientists

- UICs can provide empirical data that might otherwise be difficult to obtain.
- UIC can enhance cross-disciplinary research, which may be an advantage because it suggests new research issues, can give a better explanation of phenomena and extends the scope of funding possibilities.
- One may find new basic knowledge issues in practical research and UIC. This requires that scientists have an eye for it.
- As a scientist and a human being, it is a personal satisfaction that somebody can use one's research as it brings societal recognition (cf. Honneth 1994).
- One may, as a researcher, find UIC enjoyable and socially beneficial. One meets a lot of people and gains a professional and social network.
- One should still maintain a certain amount of basic intellectual work load (i.e. such as writing articles).
- New educational forms. University courses can be developed based on UIC. New educational needs can be discovered and firms can be involved in educations.

Why UIC is useful to firms

- This is obvious in certain cases such as the pharmaceutical, high tech and similar manufacturing industries.
- Business economics and administration research can also be useful to firms – in principle to all kinds of firms.
- A special problem is Small and Medium Sized Enterprises (SMEs), which are often owned and managed by entrepreneurs who are not academics. SMEs have difficulties in using scientific knowledge because they often have no experience with it and do not employ academics and often do not understand what scientists say. In other words they have a bad 'absorptive capacity' (Cohen and Levinthal 1990). Nevertheless, analyses show that SMEs that collaborate with researchers and employ academics grow more than other, similar, SMEs (DEA 2013).

Experience suggests that academics and researchers should keep the focus on "objective" knowledge and a critical-analytical approach. This is something that firms desire as an alternative to much business consultancy.

Impediments

The impediments for UIC that I have experienced are:

- Industry's self-sufficiency and in-ability to utilise research. In particularly SMEs often lack the absorptive capacity to utilise research and entrepreneurs often have a scepticism towards research and academics.

- UIC is often between researchers and entrepreneur networks (Schøtt and Klyver 2011). The entrepreneur networks can dissolve because of internal conflicts.
- Researchers are often 'introverts' that is, oriented towards the university milieu, intellectualism and basic research, thus they have no interest in UIC. Some researchers may even be ideologically against UIC.
- Conflicting expectations from the society. Society increasingly expects that researchers should do research that is useful for the society and that they should participate in UIC. At the same time many societies have introduced a strict regulation and measurement system that only awards teaching and basic research, typically this is done in terms of published articles in international journals.
- Universities (at least in many countries) do not get a budget for disseminating research results.
- Firm's disappointments can prevent researchers from further in-depth UIC. We as researchers have experienced that the barrier to collaboration with firms can be high, but when such barriers have been broken firms are very happy about the collaboration and the social relationship to the specific researcher that they want to develop the relationship. However, if the researcher does not see such collaboration as research but rather as consultancy, the university is no longer able to participate. This disappoints the firms and the researchers involved may become frustrated.

4. Are clusters the answer?

One trend is to use clusters for UIC. This has come from institutions outside universities (ministries, trade associations, change agent institutions), particularly the EU. Is this the best way of organizing UIC and do universities think so?

What is a cluster?

Originally a cluster was an objective, scientific description of relations between firms. A theory on clusters has emerged. A cluster (or industrial district cf. Piore and Sabel 1984) is a group of firms within a geographical area that have mutual relations, which may be outside the strict supply chain. They may include social relations, common research or other (Porter 1990). The idea of clusters is also inspired by, for example, the emergence of Silicon Valley.

The notion of a cluster has been adopted by the EU and national policy administrations – not as an objective existing industry structure, but as a supporting organisation that has the intention of strengthen such a structure. A cluster should enhance innovation in the industry. This can be done by disseminating research knowledge to firms and matchmaking where researchers and firms are paired with the purpose of developing innovations which may also come from other sources where universities are not involved. The cluster is supposed to have a strong secretariat and management that ideally should be connected to an industrial trade association or something similar. Firms, universities and change agents of different kinds should participate, either loosely coupled as in networks or more permanently.

Is a cluster the ideal organisation of UIC?

Here I shall discuss clusters as supporting organisations. From an industry and from a political perspective clusters may seem good. They are very firm oriented, closely connected to industry associations and dedicated to creating innovations in firms with the aim of improving firms' competitiveness, increasing turnover, profit and creating jobs. The clusters should have a strong and efficient organisation and management. The EU has developed a complex accreditation system that primarily assesses the secretariat, the manager and their behaviour. Collaboration with researchers is only vaguely assessed.

One might say that clusters have the advantage of being focused on innovation and economic growth and thus on results for industry and society. Clusters also connect university researchers, firms and change agents in a long lasting relation. This means that they get time for learning each other's language, creating trustful social relations and so forth. This is very valuable.

Denmark has had predecessors for clusters in the form of innovation networks. They are more loosely coupled networks that get a grant from the government, though it is necessary to have co-financing from firms. The aim is to transmit university researchers' knowledge to firms that in turn should use it to develop innovations. Change agents (semi-private institutions, which are called 'approved technological services' in Denmark, are the main players in the networks. When the dissemination of research results is repeated in similar projects with new firms, no new scientific knowledge is developed; it becomes just 'routine production' or consultancy which is not the task of universities (at least not in the Humboltian version). Therefore it is perfect that GTS institutes can take over. So far these innovation networks have come close to the ideal of UIC.

However, the innovation networks also face some problems. First and foremost that the researchers are not rewarded for this activity and the universities do not have a basic budget for it. The researchers often feel that they do not get anything out of the collaboration – it is just dissemination of research results

Negative results occur when the networks are transmitted into less loosely coupled clusters. The clusters become more hierarchical with a strong secretariat and management. They should be closely connected to industry associations, which are supposed to, more efficiently, ensure that the industry benefits from them and innovations are created. However, there is a great risk that researchers and universities will not accept this. They do not want to be secretariats for industry organisations, but be independent researchers. As long as the Humboltian ideal of free research is dominant, the universities will be dependent on the individual researchers' will to participate in clusters. It may be that the universities still want to participate, but the situation will sharpen the potential conflict between the free, individual Humboltian research ideal and the new programmatic, collective and organised research ideal.

While innovation networks come close to an ideal under the Humboltian university regime, clusters may strengthen relations to industry, but weaken the relations to researchers and thus be retrogressive.

5. Conclusion

In this paper there has been an argument for a third standpoint regarding the UIC dilemma (cf. mode 2, Nowotny, Scott and Gibbons 2001) to accept that universities should open up and collaborate with industry, but to bring some Humboltian ideals into that collaboration (e.g. objective knowledge – or at least knowledge based on experience from other similar cases).

Of course even the third way reduces the scientific community's autonomy. Some researchers will bewail that. Others will perhaps welcome it. However, it requires that the society rewards UIC and not only by publishing articles.

The paper has also included a discussion of whether or not a clusters are the ideal organization of UIC. The conclusion of my experiences is that the predecessor of clusters, innovation networks come close to the ideal, but clusters as the EU and some national administration understand them moves the organization away from the ideal.

References

Cohen, W.M. and Levinthal. D.A. (1990). Absorptive Capacity – A New Perspective on Learning and Innovation. *Administrative Science Quarterly* 35(1), 128-152

- DEA (2013), Fra idé til bundlinje: Inspiration til bedre produktudvikling i danske virksomheder [From idea to result: Inspiration to a Better Product Development in Danish Firms], Copenhagen (The Think Tank DEA)
- Honneth, A. (1994), *The Struggle for Recognition*, Cambridge Mass.: Polity Press
- Karlsson, C., Johansson, B. and Stough, R (2014), *Agglomeration, Clusters and Entrepreneurship*, Cheltenham: Edward Elgar
- Negt, O. (1971), *Soziologische Phantasie und exemplarisches Lernen : zur Theorie der Arbeiterbildung*, Frankfurt a.M.: Europäische Verlagsanstalt
- Nowotny, H., Scott, P. and Gibbons, M., (2001). *Re-Thinking Science, Knowledge and the Public in an Age of Uncertainty. Polity, Cambridge.*
- Nybom, T. (2003), The Humboldt legacy: reflections on the past, present, and future of the European university, *Higher Education Policy*, 16, 141-59
- Piore, M.J. and Sabel, C. (1984), *The Second Industrial Divide*, New York: Basic Books
- Porter, M. (1990), *The Competitive Advantage of Nations*, London: Macmillan
- Schøtt, T. and K. Klyver, K. (2011), How social network structure shapes entrepreneurial intentions. *Journal of Global Entrepreneurship Research*, 1(1): 3-22
- Scott, P. (1993), The idea of the university in the 21st century: a British perspective', *British Journal of Educational Studies*, 41, 4-25
- Stannard, (2010), *The End of Discovery*, Oxford: Oxford University Press