



Lambert Review of Business-University Collaboration

Since its inception (in 1999) the North West Chemical Initiative¹ has been heavily involved in promoting Industry – University interaction, with the primary objective of helping to maintain and improve the profitability and long-term sustainability of the chemical industry in North West England.

After surveying the current interactions with academia in a cross section of chemical companies in the North West (large – small, high tech – low tech) it was apparent that, although there was a wide range of types of interaction and widely varying experience of these interactions, there was still a strong desire to do more – to increase the knowledge about and access to skilled people and resources.

Key points from the survey were:

- Industry felt that there was a lack of information about the skills and expertise in university departments. They felt that, although academics *say* they can do many things for industry, there are many occasions when the services / offerings are only available when tied to long-term research agreements.
- There is no real appreciation of which departments / academics are able to assist with short term or problem-solving work or how to engage with them.
- There was strong support for working locally. This is additional to the needs of cutting edge industry groups for world-class expertise, irrespective of geographical location, in very specific fields (although there are several world class academic chemistry departments in the North West region in which case the demands for expertise and local contact can both be satisfied).
- There was a desire for more and better chances to develop personal networks involving academia.

As a result of these findings, two key initial actions were undertaken:

- a searchable directory of academic expertise was created, focusing on academic offerings in the field of chemistry in North West HEIs (and can be accessed on the NWCI website: www.nwci.org.uk)
- A regular series of networking seminars (every quarter) in which academics and industry contacts are invited to participate. These meetings are designed to have minimal presentation time and maximum personal networking opportunity.

¹ Description of NWCI is given in the appendix

Another major initiative, which the NWCI has catalysed and facilitated, in order to foster Industry – University interaction addressing a key industry need in the North West, is the creation of a new Innovation Centre, focused around high tech polymers and organic materials (**OMIC - Organic Materials Innovation Centre**).

Organic materials and polymers technology is vital to NW industry, with applications in such diverse fields as biomaterials, pharmaceuticals, packaging, textiles, surface coatings, separation technology, electronics, water treatment, lubricating oils and ink-jet inks. The study of organic materials and polymers in NW Universities is international in standing, but there is a widening gap between industry and Universities, especially in materials technology, and a consequent heightened innovation barrier. There are several reasons for this widening technology transfer gap, including:

- Industry's focus on short to medium term progression of existing development projects and de-emphasis of more speculative R&D for future innovations
- Loss of personnel from industry (retirements, redundancies) with academic liaison experience and broad technology networks
- Reduced funding of University research by industry and consequent lack of appreciation by Universities of industry's current needs and interests
- Research council funding which favours projects on new materials and advanced applications of them – often totally unaligned with UK industry's needs
- The overall pattern of a changing technology base resulting from divestments, large R&D operations moving abroad and the emergence of new, profitable but highly-specialist small companies

Most University-Industry initiatives are technology-driven: academic technology themes looking for problems and applications in industry. A distinguishing feature of **OMIC**, however, is that it is driven by industry needs. Its scientific direction has been based upon first establishing the requirements of the companies, operating in this speciality organic materials and polymers sector, in an industry-University collaboration (in order to fuel technology transfer and innovation). An organizational structure was then created to address those needs and to create and deliver what is wanted by both the industry and by the universities involved. The principle needs which emerged are for:

- Significant, knowledgeable assistance in coordinating and making things happen at this industry-academia interface including (leading it and doing it - not just providing brokerage, advice and encouragement)
- Generic R&D programmes which build on and combine existing academic expertise but refocus R&D activities towards the current and future needs of industry.
- Help with access to University experts and services (analysis, synthesis, characterisation)
- Relevant training, both for existing company staff and of students as potential recruits who have the requisite skills (of which there is a shortage in this sector)
- Advice on partners and funding sources and for active brokerage of R&D partnerships.

The DTI has provided £4.3 million towards this £10+ million project, commencing in 2003, to establish this Organic Materials Innovation Centre and its activities are now well underway.

To address the specific points listed in the plan of the Lambert Review:

- Identify the benefits to business of greater interaction with higher education, how this can be promoted and how any barriers holding back business demand for universities' knowledge and skills outputs can be addressed.

The chemical industry is on the whole well aware of the benefits of greater interaction. This may not seem evident on occasions, particularly when many companies are struggling in an unfavourable economic and trading climate, as other priorities can take precedence and short term-ism sets in. As to how to promote the benefits, there is a continuing need for better information about skills and services, and a need for new and improved mechanisms for technology transfer between universities and industry.

One clear message comes through from industry at this time – a better understanding is required of which universities are going to be the core research institutions and which are going to be primarily focussed on education and training. At present there are too many HEIs trying to have a research focus, although it is clear that success as measured by World Standards will only come from massive investment in the very best of breed.

- Examine the national, regional and local economic impacts of business-university interactions, including how Regional Development Agencies and Sector Skills Councils can best support such interactions.

The regional development agency in the North West is very much on-message as far as the chemical industry is concerned. The NWDA continue to support the activities of the NWCI in the area of industry-university interaction, and we would expect that further significant investment in strategic projects designed to tackle some of the issues and address needs will be forthcoming over the coming months.

- Assess the lessons to be learned from business-university interaction across a range of countries and from best practice across the UK.

There is a need for centres designed to act as bridging organisations between academia and industry. These hybrid organisations can work to bring technology out of the academic sector and into industry, sometimes addressing needs which are not cutting edge (and therefore not under other circumstances of interest to university departments keen to be seen to be working at the forefront of knowledge) while at the same time able to dedicate a proportion of their effort into strategic research designed to meet longer term industry needs.

- Analyse how business employers can better communicate their skills requirements to a responsive university sector, and how they can improve the attractiveness of career paths to graduates and postgraduates, especially in technology; and

Greater interaction and greater opportunity for key personnel to move between industry and academia would be an advantage – industry placements for university staff and PhD students, and opportunities for industry to be involved with academic departments in the form of advisory boards and other strategic roles.

- Examine the effectiveness of measures such as the R&D tax credits on business demand for research and skills.

Not able to comment on this.

- Industry's use of the information contained in academic publications, and academia's use of industry patents and prototypes or vice versa.

Not able to comment on this.

- Formal contracts, for example, the use of licensing, research contracts, consulting projects, establishment of spinout companies, product testing, or business support.

All of these activities play an essential part in the continued growth and success of the chemical industry in the North West. Universities vary in their approach to Intellectual Property Rights. The NWCI believe that the place for ownership of IP is within industry, although some universities are becoming rather possessive, this would only be justified where the university has undertaken the research without industry support. The technology transfer mechanisms in place at some universities (e.g. UMIST Ventures, Manchester Innovation) play a role in the spectrum of activities.

- Is the quality of graduate recruits satisfactory? Are there any obvious gaps in terms of skills and disciplines?

The spectrum of graduate capability has become so wide that it is misleading to think of them as a single group. Our work indicated that graduates, as most people would know them, with As & Bs at A levels and a degree from quality universities, are in high demand. They head for centres of excellence, not smaller chemical manufacturers.

Down the ability scale employers have (some) bad experiences of inadequate theoretical knowledge and inadequate personal qualities such as communication, self-management. There is widespread cynicism about the quality of some degrees ("they give out degrees like sliced bread these days"). In response, employers tend to look for experience on top of a degree - a perfect Catch -22.

Universities must take more responsibility for graduate 'fitness for purpose', not retreat behind their educational elitism, and they must prepare students realistically for appropriate employment. I have no problem with degrees at low academic levels if the students then enter industry in operational roles and work up - there is some evidence that this is happening, so we are moving back to the old system of self-betterment on the job but starting at a higher base level.

- How do businesses, individually or collectively, communicate their needs for specific scientific or technical skills and for the development of relevant courses in universities?

Collectively through the various mechanisms which exist in the chemical sector – through the Chemical Industries Association, through the networking and Innovation Centres, through the North West Universities Association. Individually, this will depend on the level of knowledge about how universities work within the company, what contacts they have and the level of need they have for such skills.

- How could more attractive career paths for science and technology graduates and postgraduates be developed?

Greater opportunity for industry placements for university staff and PhD students, and opportunities for industry to be involved with academic departments in the form of advisory boards and other strategic roles. This will lead to a greater degree of transparency – industry understanding how universities work and universities understanding the needs of industry.

- What plans does business have to attract the best talent in the future and are the universities made aware of them? If not, what more could be done to facilitate such a dialogue?

Some companies have found the Teaching Company Scheme to be of tremendous value, only to be thoroughly disappointed when the opportunity / incentive to take on university students under this scheme was unavailable (the TCS is primarily a seed corn system – financial support is geared to first and second time users of the scheme, subsequent funding is minimal). Making the TCS scheme available on a permanent basis would do a lot to help and develop an appreciation for an excellent service and way of matchmaking students with industry and their future employers.

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16th April 2003

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North West Chemical Initiative is a non-profit company limited by guarantee. It is funded by the Northwest Development Agency and by the Chemical Industry

Appendix

North West Chemical Initiative

The NWCI is an industry-led not-for-profit organisation committed to the continued and sustained success of the chemical industry in the Northwest of England. We take a leading role in forging new links between our members, utilising their expertise to develop cluster networking and best practice. We have a philosophy that companies should see benefit to their bottom-line by participating in those issues of interest to them. Our ultimate goal is to re-establish England's Northwest as a world-class hub for innovation and specialist skills for the chemical Industry.

The NWCI has a Service Level Agreement with the Northwest Development Agency and acts as its Chemical Cluster organisation and champion.

The Northwest's chemical industry 'cluster'

The sector enjoys the synergy and co-operation of an industrial cluster. It currently comprises some 800 companies employing approximately 44,000 people across a wide skills range between Cheshire and Cumbria, and represents one of the UK's largest centres of chemical industry productivity and expertise. There are 8 universities in the region, several of which have close ties with the chemical industry, both in the region and worldwide. There is also in the region a wide range of organisations directly servicing the industry, such as Analytical Services or specialist maintenance contractors; these too benefit from collaboration with academia.