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Lambert Review of Business-University Collaboration
1 Horse Guards Road
London, SW1A 2HQ

Dear Mr Lambert,

Lambert Review of Business-University Collaboration

Introduction

The Crystal Faraday Partnership is pleased to contribute to this Review since the issue of business-university links is central to our own activities and success. The Faraday programme, as you know, is the DTI's flagship technology transfer initiative with the remit to promote the active flows of people, industrial technology and innovative business concepts amongst the science and technology base and industry.

The Crystal Faraday Partnership is a technology centred organisation identifying the chemical industry's needs for green technology, linking these needs with technology providers, and facilitating the transfer process. Where there are technology gaps we promote collaborative or specific research and development programmes, facilitating access to funding sources and the management of the programmes. Green technology covers improving atom efficiency, energy efficiency and resource utilisation, the minimisation of waste, the use of alternative feedstocks, and the integration and intensification of processes and embraces the drive to a faster, more flexible and lower cost product development and manufacturing culture.

We have an extensive and continually expanding network of industrial and academic contacts covering the commodity, speciality, consumer product and pharmaceutical sectors, and we involve other groups active in specific areas of green chemical technology. This community is served by a team of experienced technology translators who make the links between the demand and supply sides and who, within IPR constraints, disseminate and share information and best practice.

Review Questions

Best Practice

The chemical industry has traditionally made greater use of academic research output than other manufacturing sectors both in the UK and worldwide using it extensively to supplement its own significant research resources. Indeed possession of such in-house expertise is an essential feature of successful technology transfer since without it the risks of embarking on new technology implementation are rarely surmountable. Though for some time, and now increasingly, multinational companies seek international centres of academic excellence for

their research collaborations, smaller companies continue in the main to rely on contacts either from their own university training or their local institutions. An important role which Crystal discharges is to help broaden a company's base of academic contacts and facilitate access to innovative technologies specific to their operations.

There are examples of fruitful collaborations between industry and academia and many more examples of less successful ones. It seems almost facile to note that the key, as in any joint endeavour, is a mutual understanding at the outset of each party's objectives and success criteria coupled to a project scope which will deliver them. Inevitably when the academic party is principally concerned with peer recognition of intellectual rigour and the industrial party with establishing financially rewarding competitive advantage there is frequent opportunity for divergence.

There remains, and this is evident even in the USA, a fear that too close ties with industry will inhibit academic freedom to the detriment of reputation and there is no doubt that much research of industrial importance is not viewed as intellectually challenging by academics. Industry after all is expert at making things work and does not necessarily need an understanding of why. Often industry would be best served by a facility to conduct short, proof of concept type research which is in conflict with the traditional three year academic research cycle. Only large departments have the ability to divert resource onto such projects. It is noteworthy that Industrial CASE Awards are extensively used by the chemical industry as a mechanism to conduct focussed work programmes and gain the benefit of having the researcher resident in the company facilities for at least some of the time.

Barriers

With few exceptions the universities' principal funding route for research remains the Research Councils through responsive mode proposal submission. The issue of industries' currently diffuse input to the establishment of the Research Councils' research priorities has been identified by the Chemicals Innovation and Growth Team Report which recommends a chemical industry group be set up specifically to identify requirements. In the area of Green Chemical Technology the work Crystal has done in establishing the industry's research needs is being recognised by EPSRC in configuring future calls. This impacts on industries longer term research needs in the ten year plus time horizon.

In the medium term, that is the five to ten year time horizon, the transfer of technology from academia, which by nature of this time scale must already exist, is often limited by the degree of its development. There are many examples in Crystal's area of technology where interesting science has existed for some time but has not been picked up by industry for application because the risk and cost of undertaking the necessary further development are seen as too high. This arises from two common shortcomings, firstly the lack of engineering input to scientific research programmes because of the low level of collaboration between academic chemists and chemical engineers (see also the recent Whiteside Report for the EPSRC), and secondly because of the difficulty in obtaining funding for collaborative demonstration projects of the type needed to take bench science into application.

The position on intellectual property still varies from institution to institution with some granting ownership to the individual researcher whilst others capture the rights centrally. The latter situation is becoming more common as universities come under increasing funding pressure and see financial opportunity in exploitation of their intellectual property. There does not seem to be any direct evidence that either situation favours or inhibits technology transfer though apocryphally institutions place a higher value on their intellectual property.

Recruitment

The Faradays have active postgraduate training programmes aimed at raising the employability of students particularly with regard to their soft skills and knowledge of industrial practices. It is however increasingly apparent from widely published research that whilst the

quality of the best science and engineering graduates and postgraduates remains high there is a longer tail of the less able. Industry, particularly the multinationals, will continue to solve any graduate and postgraduate recruitment problems by seeking candidate from overseas.

Financial Considerations

Financial considerations are always a factor in establishing collaborations but industry will usually buy value except in the most oppressive economic climates. The critical factor reflecting on financing collaborative research is becoming time, both in terms of the resource available to take oversight of the collaboration and in terms of the delivery time for the output. In both these areas industry is under competitive pressures and is seeking outside agencies, such as the Faradays, to assist the process. Likewise academia will need to respond with innovative practices.

If you require further clarification on any of the above points do not hesitate to contact me. I await with interest the outcome of your review.

Yours sincerely,

Malcolm Wilkinson
(Managing Director)