

Smith Institute for Industrial Mathematics and System Engineering

Submission to the Lambert Review of Business-University Collaboration

I am writing in response to an invitation to contribute to the Lambert review of Business-University Collaboration. My experience is in the commercial application of the mathematical sciences, currently as Director of the Smith Institute for Industrial Mathematics and System Engineering, which is the leading intermediate organisation in the UK coupling industry to the science base in these areas.

The review raises four questions for consultation:

1. Best practice and examples of excellence

Industrial mathematics in the UK was pioneered at the University of Oxford in the late 1960s. The philosophy adopted at that time was for industrial problems and challenges to act as catalysts for scientific advances, and the approach has been remarkably successful. One of the annual highlights are week-long Study Groups, at which companies bring problems to be studied and solved in an open workshop by academics from across the UK. This format has been exported to the US, the Netherlands, Denmark, Australia, Canada, and, more recently, India and China. In the last few years, the Smith Institute has built on this experience to establish the UK's only Faraday Partnership in mathematics, with over 100 companies and 25 universities currently engaged.

2. The main barriers to business-university relationships

There is a general disconnection in the UK, which prevents business from deriving best advantage from the expertise in the UK's universities. This disconnection is in large part caused by the forces to which universities respond when setting their priorities, especially in relation to the Research Assessment Exercise. Scientific peer review does not encourage industrial relevance in research agendas. There are too many occasions on which scientific excellence is considered to be in conflict with industrial relevance. Until these cultural and structural effects are removed then the barriers to effective business-university relationships will remain. There is a common perception in business that university interactions are difficult to manage, are difficult to create on industrially relevant timescales, and will not generate output in a form that can easily be used.

A further issue is the shortage of the expertise and manpower that is needed to build effective relationships. Faraday Partnerships address this problem by employing dedicated staff (called Technology Translators), whose primary role is to respond to industrial needs in a timely and focussed way, and to bring academics into collaborations in ways that maximise their impact. In mathematics at least, intellectual property arrangements do not present a problem.

3. Recruitment of graduates and postgraduates

There is need for a stronger dialogue to be established, so that the career opportunities presented by business can be properly communicated to the best students. Business needs will not be met by 'ticking off' perceived key skills on some curriculum checklist. Instead the requirement is for graduates and postgraduates to be educated to think creatively and reason precisely in ways that are transferable across many business sectors. This entails a raising of the level of mutual understanding between business representatives and university teachers, which could be fostered through exchange visits, short secondments and presentations.

4. Financial considerations

Much more funding is needed, directly into the business-university interface. This could go into business (via tax credits) or universities, but the impact is likely to be greater from creating new vehicles such as Faraday Partnerships, operating on the interface itself. Faraday Partnerships are an imaginative and flexible approach, but are substantially underfunded in comparison to their natural counterparts in other European countries. Their long-term future should be secured.

Thank you for the opportunity to contribute. I wish the review every success.

Sincerely
Dr Robert Leese
Director, Smith Institute