

Mr R Lambert
Lambert Review of Business-University Collaboration
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DJG/pc/mm
3rd April 2003

Dear Mr Lambert,

I am replying to your letter dated 4th March 2003 addressed to Professor Sir Harry Kroto, who is our President.

I am Chief Executive at the RSC and before that spent 20+ years in the chemical industry and also interacted with the academic sector and with Government, so I hope I am reasonably well qualified to respond to some of your questions. If I go through them roughly in the order of your letter, my comments would be:-

We live in an age when information in the public domain spreads very rapidly. Industry will use, in various forms, anything that its researchers can find in academic publications. I have personally no feel for academic use of industry patents but I suspect it is fairly low. At this stage, I should say there is no such thing really as 'industry'. Even the chemical and pharmaceutical industries are very diverse and non-homogenous. Gross generalisations are dangerous. The key decision for anyone in the commercial sector is when an invention has been made, whether to file for a patent or whether to keep it as a trade secret. As you will know the patent laws between the US (first to invent) and Europe (first to file) are different and the legal processes are equally very different. One of the effects of this is to ensure that everybody in the US keeps a daily laboratory notebook (at least in chemistry) which can be used as a primary source of evidence in a court.

Your second point is about joint ventures between universities and business and personnel exchange. I think there is quite a lot of evidence in the chemical sector of collaborative research projects and also spin-out companies in some of the 'better' universities.

In terms of personnel exchange, one of the biggest assets that a sector such as chemicals derives from the academic sector actually derives from the hiring of highly qualified people. In fact, although politicians like to boast about the number of patents that universities have filed, from an industrial perspective there is much greater value in the supply of highly qualified people to work in a company.

Your fourth point concerns informal contacts such as meetings and conferences, etc. In the chemical sector, in my experience this was once extremely powerful and well developed amongst the chemical majors if the departments were relevant to them. In some cases this would be chemistry, chemical engineering, polymer science, etc. In other cases it would be different but the basic point remains. In the chemical sector there was a high take up of what is referred to as Industrial CASE Awards, where there was joint sponsorship of a PhD student between industry and a Government Research Funding Agency. However, what has happened recently is that as the pressures on industry or industrial members has got more and more acute, there is less time to undertake some of these informal links. I am sure this is not unique to chemical science based industries but it is very noticeable where we are.

Your next point concerns formal contracts, licensing, etc. There is no general answer to this question. Companies will use whatever system suits them at the time and that clearly varies with the situation of the company, the business climate and other variables. I find it hard to believe that there is a general answer to this, except that politicians would like to find a 'one size fits all' answer, which I do not think is realistic.

You also asked about the Local Regional Development Agency or the Sector Skills Councils. These are really far too new to have much impact yet that can be assessed. I know there are strong political motivations both locally and nationally but I remain somewhat sceptical about their ability to deliver.

If I move on to section 2 of your questions, I think that the management and organisational issues are not down to structural matters but about the ability of individuals to work their way round and through existing systems. What is clear to me is that the timescales and decision making structures of the commercial sector and the universities are really quite different. Since the ending of the system where what is now BTG (formerly NRDC) had monopoly (more correctly monopsony) rights on purchasing technology, it is now much more flexible. I think those who make the most out of it, are those who are most interested in doing so. The danger is that those in the academic sector whose technology does not have any commercial value, suffer in the process. Hence, if you are in a field which might ultimately lead to a trend setting pharmaceutical, the industrial world would beat a path to your academic door. If you are involved in something very theoretical or of less immediate commercial relevance, it is much less obvious.

Very recently the Royal Society of Chemistry acted as the Secretariat for the so called International Review of Chemistry (in shorthand, known as The "Whitesides Report") which was undertaken on behalf of the Engineering & Physical Sciences Research Council. The members of the panel, all non UK persons, are experts in their various fields. One of the conclusions that they arrived at was that collaboration between industry and universities was very close and was causing universities to do more short term work. By definition, I was not a member of the panel but I somewhat dissent from that conclusion. I think we see increasing evidence of Government policy directing research in universities and that, inevitably, makes things more short term and focussed. There must a case for allowing free thinkers to emerge.

I merge together the next two points on technology transfer and intellectual property. I already mentioned the different patent systems between Europe and the US. I suspect that in the university sector the understanding of intellectual property law is in general rather basic. However, as far as technology transfer is concerned there is, in my view, a problem with the sort of people who are charged in the university of fulfilling the role of 'Industrial Liaison Officer' and frequently they over value a primary invention. They misunderstand the chain that goes from a primary invention, such as a patent, all the way through to getting a product to market. There is a rapidly escalating chain of cost in that process, which is implicitly understood by people in commerce but less so by people in the academic world, who believe that once you have made an invention the value is already there.

I move to your third set of questions about graduates and post graduates.

I am unaware of any reliable measure of the quality of graduate recruits. For some time, I had an involvement with the Chemical Industries Association. That organisation did then conduct an annual survey on numbers but also tried to measure the quality and it was very hard to get anything that was even remotely rigorous. The danger is that middle aged research directors such as I was, fall into the equivalent trap of 'the policemen are getting younger'. There is in my view not much doubt that over a period of time, the quality in some areas has declined. The two areas of greatest weakness are I think in practical skills and in mathematical ability. Equally and conversely the young of today are much more conversant with computing and related skills. I do not think there is a generalisation to be made.

If I mix together your next two points about communicating the need for specific skills and generating attractive career paths, there is one all consuming problem. This is that in general many parts of the chemical industry do not, on the face of it, pay as highly as other careers. In practice, many chemists are very well rewarded and one of the issues is that the pharmaceutical sector, which probably has the highest rewards, tends not to publish its data. This reinforces what is already an image problem where a career in chemistry is not perceived as particularly glamorous. Unfortunately, careers in the City for people with science and engineering degrees attract the headlines, albeit there are not very many of them.

Your fourth set of questions talks about whether financial considerations help or hinder relationships between business and universities.

There are several issues here. The first of these is the financial pressure that the university sector finds itself under. Increasingly, this feeds through to problems in the subjects which are expensive to teach and which to do research, of which chemistry is one. The Government has set a target for 50% participation in tertiary education before many years without increasing the unit of funding. Hence, a Vice Chancellor would want to drive people into cheaper subjects to teach and in which to do research, typically in the liberal arts or humanities but not chemistry, physics or engineering.

The second pressure is that on those in the commercial sector. There are endless debates about whether the role of the City leads to 'short termism'. Others, more expert than I, who have studied this at length would have a well rehearsed answer which I would not. I just know what it felt like when I was Technical Director of Courtaulds and one always felt under pressure in the relatively short term. Many of the things that I could do 20 years ago are simply not playable by today's people in an equivalent position.

I hope these thoughts are helpful. I would want to emphasize at this point that these comments are made entirely in a personal capacity and are not Royal Society of Chemistry policy.

If you or your colleagues want me to come and talk face to face about my experiences, I would be more than happy to do so.

Yours sincerely,

David Giachardi