

# **ENTERPRISE AND LIFELONG LEARNING COMMITTEE**

Tuesday 12 June 2001  
(*Afternoon*)

Session 1

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## ENTERPRISE AND LIFELONG LEARNING COMMITTEE 18<sup>th</sup> Meeting 2001, Session 1

### CONVENER

\*Alex Neil (Central Scotland) (SNP)

### DEPUTY CONVENER

\*Miss Annabel Goldie (West of Scotland) (Con)

### COMMITTEE MEMBERS

\*Bill Butler (Glasgow Anniesland) (Lab)  
\*Mr Duncan Hamilton (Highlands and Islands) (SNP)  
\*Marilyn Livingstone (Kirkcaldy) (Lab)  
\*Mr Kenny MacAskill (Lothians) (SNP)  
\*Mr Kenneth Macintosh (Eastwood) (Lab)  
\*Des McNulty (Clydebank and Milngavie) (Lab)  
\*David Mundell (South of Scotland) (Con):  
\*Tavish Scott (Shetland) (LD)  
\*Elaine Thomson (Aberdeen North) (Lab)

\*attended

### WITNESSES

Professor Steve Beaumont (Institute for System Level Integration)  
Brendan Hyland  
Professor Sir David Lane (Cyclacel Ltd)  
Mr Alasdair Morrison (Deputy Minister for Enterprise and Lifelong Learning and Gaelic)

### CLERK TO THE COMMITTEE

Simon Watkins

### SENIOR ASSISTANT CLERK

Judith Evans

### ASSISTANT CLERK

Linda Orton

### LOCATION

Committee Room 1



## Scottish Parliament

### Enterprise and Lifelong Learning Committee

*Tuesday 12 June 2001*

*(Afternoon)*

[THE CONVENER *opened the meeting at 14:02*]

**The Convener (Alex Neil):** I welcome everybody to the 18<sup>th</sup> meeting in 2001 of the Enterprise and Lifelong Learning Committee. I welcome to the meeting Alasdair Morrison, the Deputy Minister for Enterprise and Lifelong Learning and Gaelic. On behalf of the committee, I congratulate Ken Macintosh and his wife on their new arrival. I believe that mother and baby are fine. I spoke to grandfather last night and he was fine, too.

**Mr Kenneth Macintosh (Eastwood) (Lab):** Thank you.

**The Convener:** I thought that you would be put in charge of the delivery unit at No 10.

### Item in Private

**The Convener (Alex Neil):** Does the committee agree to discuss item 4 in private?

**Members** *indicated agreement.*

## Subordinate Legislation

**The Convener:** We move to item 2, which concerns the regulations for the Education (Graduate Endowment and Student Support) (Scotland) Act 2001. I shall first outline the procedure that we have agreed with the minister. The minister will give a 10-minute introduction to the regulations, after he has introduced his officials. We will then have a question-and-answer session of up to 30 minutes to allow him to answer questions from members of the committee. I shall then open up the debate, after which I shall put the question on the motion at 3.30 at the latest. Obviously, if we get through proceedings more quickly, that will be fine. However, I want to allow members the maximum time to ask questions or to make any contributions that they might wish to make.

**Marilyn Livingstone (Kirkcaldy) (Lab):** I will make a suggestion. We have discussed the issue at least three times and we have had formal debates on it. We have had a chance to air our views on the subject. In no way do I want to limit debate, but I would find it more useful if, following the minister's introduction, we could go straight into the formal debate. We cannot change or amend the instrument; we can either agree to the motion or not. It would be good if members could have the debate and raise any points or questions at that time.

**The Convener:** What do other members feel?

**Tavish Scott (Shetland) (LD):** Marilyn Livingstone makes a fair point. The subject has been well aired. If it were a question of providing and considering subtle amendments or specific points of information on the regulations, which could then change, that would be a different matter. However, as the committee is expected to say only yes or no, we should just do as Marilyn Livingstone suggests.

**The Convener:** Okay. As there seems to be all-round agreement on that, we will proceed in that way. We are cutting down your work load, minister, although we might still grill you until 3.30pm. I invite you to introduce your officials and to speak to the regulations.

**The Deputy Minister for Enterprise and Lifelong Learning and Gaelic (Mr Alasdair Morrison):** The committee has met Jim Logie, Lucy Hunter and Chris Graham previously. I thank the committee for inviting us to the meeting. I am glad to have the opportunity to begin the formal debate on the final stage of the Graduate Endowment (Scotland) Regulations 2001.

The regulations are the first to be made under regulation 1 of the Education (Graduate

Endowment and Student Support) (Scotland) Act 2001, which received royal assent on 3 May. Throughout the progress of the bill, we provided the committee with illustrative drafts of the regulations in order to enable members to familiarise themselves with the regulations' main provisions. The final set of regulations was laid on 15 May. We have also discussed the detail of the regulations with our advisory group, for whose input we are grateful.

The regulations cover the arrangements for payment of the graduate endowment by liable graduates and they specify which graduates are liable to pay and when. The regulations also specify the amount of the graduate endowment that is to be paid and they make provision for loans to be made available to graduates to enable them to discharge their liability.

I am conscious of the fact that the Subordinate Legislation Committee asked us to reconsider the balance of detail in the act and the regulations, which we did. The Subordinate Legislation Committee acknowledged the need for flexibility in the detail of the scheme to the extent that, if more detail was included in the act, it would need to be in the form of what is sometimes called a Henry VIII clause. In other words, the act would have to be open to amendment by secondary legislation. We do not believe that that would have been an improvement and it could have become more confusing over time.

I shall deal with the regulations in order. Part I merely covers the citation and commencement details. The regulations' coming into force on 1 August 2001 will ensure that students who start degree courses in the forthcoming academic year will be liable to pay the graduate endowment. Part I also provides definitions for specific terms that are used elsewhere in the regulations. Part II explains which new students will be liable to pay the endowment. Under regulation 3(1) a liable graduate is a person who has undertaken a full-time degree course that commenced on or after 1 August 2001 at a Scottish college or university.

The regulations recognise that there is an increasing variety of patterns of study. We want students to be as clear as possible at the start of their courses about whether they will be liable to pay the endowment. For that reason, regulation 3(1)(b) sets out the minimum periods of full-time degree study that will attract liability. In particular, we have taken account of the growth in recent years in the number of students who progress from higher national certificate to higher national diploma to degree-level education. Responses to our consultation and subsequent discussions with a variety of higher education representative bodies indicated that students should, as far as possible, be treated in the same way, whether they gain

their degree through the conventional route or they begin their studies on a sub-degree HE course—for example, on what is sometimes referred to as the 2-plus-2 model.

Regulation 3(1)(b) therefore provides that, for students whose study has been undertaken wholly on a degree course, the period of full-time study that will attract liability should be three years. For a student who moves from a sub-degree course

“as part of a continuous programme of higher education”,

only two years on a full-time degree course are needed. We are aware that a number of students follow the 2-plus-1 model of study, taking one year after an HND to reach ordinary degree standard. We received forceful representations that that is a valuable way of encouraging non-traditional students to degree level study and that making those students liable for the endowment might risk preventing the further development of that approach. We agree that the development of the 2-plus-1 model is especially valuable in widening access; therefore, regulation 3(1)(b) will ensure that those students will not be liable to pay the endowment. We expect patterns of HE study to continue to evolve, and we think that it is right that the rules are contained in regulations, rather than in the act. In that way, liability for the endowment can continue to be adapted as necessary to reflect the changing nature of HE provision.

Regulation 3(1)(c) deals with the residency rules for liability, which are almost identical to the residency rules for the receipt of bursary and other support from the Student Awards Agency for Scotland. The only difference between these rules and those that are applied by SAAS is that refugees are exempt from liability for the endowment, although a refugee might be entitled to support from SAAS for at least part of their course.

Regulation 3(2) will ensure that students who are currently on HNC or HND courses, who later transfer to degree courses, will not be liable for the endowment—in other words, we accept that they should not be treated as new students. Such students' HNC or HND courses must commence in 2001 or later for the continuous programme of study to trigger liability.

Regulations 3(3) and 3(4) will ensure that graduates whose pattern of study involves a change of institution or course, or that involves part-time study will be liable as long as they meet the requirement of the minimum period of full-time study.

Regulation 4 deals with exemption. It provides that graduates will be exempt from liability if they fulfil the criteria that are applied to mature students at the start of their courses for the purpose of student support. The exemptions are contained in

the regulations so that the definitions can be kept in line with those that are used elsewhere in the student support system, which are contained in regulations, or in rules that are made under regulations.

Regulation 5 provides that certain courses are exempt either because of their level—such as HNC and HND courses—or, in the case of the professions that are allied to medicine, because of separate funding arrangements for students who are undertaking them. A review of the funding arrangements for students who are undertaking health-related courses—which are listed in schedule 3—is currently under way and the position of those students in relation to the graduate endowment will have to be considered as part of that review.

Regulation 6 requires individuals, colleges and universities to provide information that is necessary for the assessment of whether students are liable for the graduate endowment.

In part III, regulation 7 explains that the amount of graduate endowment that is payable by liable graduates will be set at the start of their degree course, whether or not the degree follows directly from a lower-level course. Under regulation 7(3), the amount of endowment for new entrants this year will be £2,000. We considered very carefully whether those provisions would be better contained in the 2001 act or the regulations, especially in the light of the comments of the Subordinate Legislation Committee. However, we did not feel that it was appropriate to embed a specific figure in the act. Such a step is always unusual and risks tying a scheme to an out-of-date figure. We felt that the amount of the endowment and the provisions for uprating were properly matters that should be included in regulations rather than in primary legislation. As regulation 7(4) makes clear, we are committed to linking increases in the endowment only to inflation.

Regulation 8 deals with the detail of payment. Graduates will not be required to pay the endowment until 1 April of the year following their graduation. The “due date” in regulation 8(1) is defined in part I. If they choose to do so, liable students may discharge their liability by taking out an income-contingent student loan. The regulations provide that a loan must be made available to liable students for that purpose if they apply for one. The loan that is applied for must be for the full due amount of the graduate endowment. The regulations also give Scottish ministers discretion to accept an application that is made after the relevant date.

I move,

That the Enterprise and Lifelong Learning Committee recommends that the draft Graduate Endowment (Scotland) Regulations 2001 be approved.

**The Convener:** At the end of our discussion, I shall put to the committee the question on whether the motion be agreed to.

I want clarification on the threshold, which has been the subject of some debate. I understand that the threshold at which the endowment—

**Mr Morrison:** I thought that we were involved in a formal debate and that I would wind up as per usual.

**The Convener:** Yes, but I thought that we would take the opportunity to ask some questions as well.

**Mr Morrison:** I understood that we would start with a formal debate.

14:15

**The Convener:** Fine. However, I would like to make a point that you may want to comment on about the threshold. I understand that the threshold is set in separate regulations in Westminster in relation to the legislation that covers student loans. You might want to update us on whether there has been any change to the threshold or whether one is planned.

**Marilyn Livingstone:** I want to make a couple of points. I welcome the provisions in relation to HNC and HND courses, which will promote inclusion because many people, particularly mature people and people who are returning to education, find it difficult to access their local colleges.

Paragraph 5 of the Executive note talks about the wide-ranging review that is under way of the support that is available to students on courses on professions that are allied to medicine. Do you have any idea of the time scale for that review?

**The Convener:** Are there any other comments?

**Mr Kenny MacAskill (Lothians) (SNP):** Do you mean questions or points for discussion?

**The Convener:** Technically, we are speaking to the motion at this point in the meeting. Before Mr MacAskill arrived, we agreed that instead of having a separate question and answer session, we would have a formal debate. At the moment, members can raise points that the minister can answer in his summing up.

**Mr MacAskill:** The debate has been had elsewhere. I put on record that I will not support the motion or the regulations. A tuition fee is a tuition fee, whether it is paid at the beginning, middle or end of a course. That fact cannot be masked by changing the name to “graduate endowment”. The SNP has consistently opposed tuition fees on principle and opposes the Executive’s current plan on the basis that it does

not meet the Cubie recommendations on the threshold at which repayment should commence.

The proposal will compound student debt and so it does a disservice to students who aspire to high educational achievement and to the nation, because it jeopardises the future of those who might otherwise go on to a university career and contribute much to society. The passing of the Education (Graduate Endowment and Student Support) (Scotland) Act 2001 was a retrograde step, as are these regulations, which are the nitty-gritty of the legislation. The regulations represent the bill that students will have to pick up as a result of the Lib-Lab partnership deal.

**Miss Annabel Goldie (West of Scotland) (Con):** In the debate in the chamber, my party expressed opposition to the graduate endowment scheme for reasons that are similar to those that Mr MacAskill has just stated. The Conservative party thinks that the proposals will not result in the disappearance of one form of charge, but in the replacement of a charge at the front end of higher education with a charge at the graduate end. Because of that, I am unable to support the motion.

I would be grateful if the minister could clarify a few points. I am unclear about what "relevant day" means in regulation 4. It is not defined in regulation 2, which deals with interpretations. I do not know whether it means the day on which payment is due or some other day. Regulation 4(1)(c) says that a graduate is exempt from repayment if he or she has

"supported himself or herself out of his or her earnings for periods not aggregating not less than three years."

Over what time scale would those three years be aggregated?

**Tavish Scott:** As we have just finished a general election campaign, I will restrain myself from commenting on the SNP and Tory policies on this issue—we could be here all day if we were to examine them closely.

I am sure that the minister is aware of the comment by the education editor of *The Herald*, Elizabeth Buie, on May 11. She wrote:

"Scottish universities are outstripping the higher education sector in the rest of the UK in terms of student applications probably due to the abolition of tuition fees and the increased profile of Scotland following devolution."

She also said that that

"may be the first real sign that the Cubie effect is taking hold – that Scottish students are not applying to universities outwith Scotland because they will be liable to pay tuition fees."

On the points that were made about the debt burden, will the minister confirm that the Executive has guaranteed that no student, even after paying

the graduate endowment, will have a greater debt than at present and that the great majority will have less?

The convener made an important point about the threshold. I believe that Mr Morrison's predecessor, when speaking in the stage 1 debate in the chamber last year, recognised the problems around the threshold issue and said that there were on-going discussions with counterparts south of the border. Perhaps the minister could answer that point when he winds up.

**Des McNulty (Clydebank and Milngavie) (Lab):** Not only does *The Herald* regard the Executive's initiative as being a positive step, most people in higher education think so as well. The graduate endowment is looked on with envy by people elsewhere in the UK.

I do not know whether the mechanism to decide who are liable graduates takes adequate account of the fact that increasing numbers of students in Scottish higher education are following mixed modal courses or are moving into education in a mixed-mode way and taking some of their course on a part-time basis before becoming a full-time student later, or vice versa. For example, regulation 3 in part II is geared towards a full-time student undertaking a full-time course of education on a particular day. What are the implications for a student who has done four years of part-time study and then becomes a full-time student or one who begins as a full-time student but completes their education as a part-time student? How will that affect their liability for repayment of the graduate endowment? Is there sufficient flexibility in the regulations to allow the requirements of individual part-time students to be dealt with sympathetically and appropriately?

**Mr Morrison:** I will respond to the point that the convener and Tavish Scott raised about the threshold. The threshold is set for the repayment of student loans rather than for the endowment. Payment of student loans is covered by UK legislation. We think that the threshold should be kept under review and we will do that in conjunction with colleagues in the UK Government. It is an on-going process.

Marilyn Livingstone talked about the review of support for students on courses for professions that are allied to medicine. The Minister for Health and Community Care has indicated that there will be a review and I am more than happy to write to Marilyn Livingstone on the latest position on that matter. I can do that soon.

I regret that I cannot get Annabel Goldie to support our proposals. She raised the issue about a graduate who has supported himself or herself out of his or her earnings, which is dealt with in regulation 4(1)(c). The period that is concerned is



the whole period prior to the start of the courses.

She also asked about the relevant date. It is defined in regulation 4(4) of part II. The definition enables the status of an independent student to be determined at a relevant point in the year, regardless of when the course begins. I am happy to follow up that point with a further letter of explanation.

Other members have responded ably to Kenny MacAskill's point. I recognise Tavish Scott's delicacy in making his point only a few days after a general election. I am happy to confirm to Mr Scott that no student will have more debt as a result of the graduate endowment and that many students will have less debt. I acknowledge Des McNulty's points about people in higher and further education welcoming what we have done over the past two years.

I have listened with interest to the views that have been expressed by committee members today. I remind members of the wider context of student support in which the graduate endowment sits. The endowment and the regulations that govern it are the result of an independent inquiry and of wide-ranging consultation. The purpose of the endowment is not to penalise graduates, but to ask them to make a contribution to support future generations of students. As everybody appreciates—or should appreciate—that is a most reasonable request. It is one that will help to ensure that the benefits of higher education are extended to those who traditionally have been excluded from advanced learning.

I urge the committee to recommend that the draft regulations be approved.

**The Convener:** Thank you, minister.

The question is, that the motion on the regulations be agreed to. Are we agreed?

**Members:** No

**The Convener:** There will be a division.

#### FOR

Butler, Bill (Glasgow Anniesland) (Lab)  
Livingstone, Marilyn (Kirkcaldy) (Lab)  
Macintosh, Mr Kenneth (Eastwood) (Lab)  
McNulty, Des (Clydebank and Milngavie) (Lab)  
Scott, Tavish (Shetland) (LD)  
Thomson, Elaine (Aberdeen North) (Lab)

#### AGAINST

Goldie, Miss Annabel (West of Scotland) (Con)  
MacAskill, Mr Kenny (Lothians) (SNP)  
Mundell, David (South of Scotland) (Con)  
Neil, Alex (Central Scotland) (SNP)

**The Convener:** The result of the division is: For 6, Against 4, Abstentions 0.

*Motion agreed to.*

That the Enterprise and Lifelong Learning Committee

recommends that the draft Graduate Endowment (Scotland) Regulations 2001 be approved.

**The Convener:** For the benefit of those who are sitting in the public gallery, I say that the regulations go to the chamber for finalisation, but we do not know on which date. I thank the minister and his officials for attending the committee this afternoon. I look forward to seeing the minister again soon, when, no doubt, the subject matter will be different.

**Mr Morrison:** It is always a pleasure.

**The Convener:** It was anticipated that the debate would take up more time. Our witnesses for item 3 are not due to arrive until 3 o'clock. We have two options: we can move into private session to deal with item 4 or we can have a 35-minute break. Are we agreed that we will move into private session to deal with item 4 and that we invite members of the public to re-join us at 3 o'clock?

**Members indicated agreement.**

14:27

*Meeting continued in private.*

15:03

*Meeting continued in public.*

## Teaching and Research Funding (Scottish Higher Education Funding Council Review)

**The Convener:** Item 3 is the continuation of the inquiry into the Scottish Higher Education Funding Council teaching and research funding. I welcome our panel of witnesses: Brendan Hyland is the former chief executive of Kymata; Professor Steve Beaumont is director of the Institute for System Level Integration at the Alba Centre in Livingston; and Professor Sir David Lane is chief scientific officer of Cyclacel Ltd.

Will you each make introductory comments, or will someone take the lead?

**Professor Steve Beaumont (Institute for System Level Integration):** Do you need some background on us?

**The Convener:** Yes. Your papers have been circulated to the committee and I have no doubt that members will want to ask many questions on your written evidence, but it would be useful to have a short introduction from each witness.

**Professor Beaumont:** I am a former head of the department of electronics and electrical engineering at the University of Glasgow. I now run a research and education institute that involves four universities and is part of the Alba Centre, but I have also been involved in the establishment of companies to commercialise university research. I am a member of the board of Electronics Scotland and of the research and enterprise committee of the University of Glasgow.

The evidence that I have presented focuses on the electronics industry and my findings from working with the Alba Centre and helping to develop the electronics industry, but that evidence also reflects some of my other experiences of commercialisation in a university and as a head of department.

The SHEFC proposals address the process of commercialisation. In my written submission, I make several points about that, particularly on how we can encourage the right sort of commercialisation and whether new structures need to be investigated to exploit that. I also make the point that we should address the impact of commercialisation. The committee and others must be aware that although commercialisation is excellent for the development of the Scottish economy, it has a feedback effect on the research base in its impact on the availability of staff and

the draining of staff from universities. That will have an impact on the future of the research base.

**Professor Sir David Lane (Cyclacel Ltd):** My background is as an academic scientist. I trained in cancer research and worked in the academic sector until I moved to Dundee in 1990. Since then, I have started to undertake research projects in collaboration with pharmaceutical companies and to consult for biotechnology and venture capital groups.

In 1996, I established a spin-out company from the University of Dundee called Cyclacel Ltd, which was funded initially by Merlin Ventures, a London-based VC group. Cyclacel is dedicated to the discovery of new anti-cancer drugs. In conducting that process, I have experienced the cutting edge of commercialisation of university research. Several issues have arisen from that, which concern helping people like me to carry out the process.

It is important that a partnership is established between the university, the academic entrepreneur, the VC groups that will fund the enterprise and the charities or other organisations that have often funded academic research in the biological sector. Many academics would like to start companies in universities in my sector, but do not do so because they are not nurtured or supported in that process. That is a key issue. Many schemes to encourage such work exist, but they do not work terribly well. We should discuss that.

Another big problem in the UK is the difficulty in attracting the right sort of venture capitalists. It is important to recognise that the UK base of VC groups is, with few exceptions, not desperately technologically informed, compared with the base in the US. Companies must have a clear business plan and recognise that they operate—certainly in my sector—in a global business, and that it is necessary to engage global capital. If Scotland wants to succeed in biotechnology, it must create businesses that can succeed globally.

**Brendan Hyland:** My perspective is not that of an academic, but of an individual who has been closely involved in the past few years in commercialising technology from the University of Glasgow and the University of Southampton and from some commercial organisations—British Telecom, IBM and Polaroid in the US.

I was the founder and first employee of a company called Kymata, an optoelectronics business that was set up about three and a half years ago to commercialise optoelectronics technology that came largely from British Telecom. In the process of driving the business, we were exposed to a number of different experiences of the commercialisation of technology, from the

academic and industrial sectors. I would certainly like there to be an approach to improving, rationalising and decreasing the cost of the transfer of technology from the academic sector to the commercial sector.

Some of my experiences over the past few years have indicated that transferring technology is a difficult and non-trivial process. It is easier to transfer technology from a commercial environment, such as a British Telecom or IBM research lab, than it is to transfer it from a university research environment. That is largely because there is a greater commercial predisposition in commercial research organisations than there is in academic ones.

I would like to pick up on a point that Professor Sir David Lane made. Over the past few years, we have also experienced the very different approaches of Kymata's venture capital funders from Europe, compared to those from North America, which have a greater depth of experience and understanding of the technology commercialisation process in silicon valley. I would like to see a much more sophisticated venture capital community here in Europe. That is a broad European issue, not a specifically Scottish one.

My relatively brief exposure to academic funding indicated to me that a number of the drivers on which academics focus their research tend to orient research towards pure, rather than applied, research. From a taxpayer's perspective, I am concerned that we do not necessarily get a very good return on our investment. I would like a radical overhaul of the research assessment exercise grants system.

At a more micro level, Scotland is in quite a peculiar situation with respect to the UK, because we have a relatively small commercial research base. That leaves this region in a position where university research is the dominant element of research in the community—a situation that gives cause for concern. In that respect, I think that there could be a strong driver for Scottish universities to be encouraged actively to focus on applied, rather than pure, research to balance the overall research base in Scotland.

I made a number of other points in my submission and I will be happy to answer questions about them.

**The Convener:** I thank all three witnesses for their written evidence. I shall kick off by pursuing some of the points that you made. There are some threads that run through all three papers. One of those is the view that the existing mechanisms for encouraging research and commercialisation are wholly inadequate for the job. Two of the papers cite the research assessment exercise as it is currently constituted. I know that there is also

frustration with some of the SHEFC funding and with Scottish Enterprise technology venture schemes.

If I were to ask each of you what the three top priorities are for action to address the situation—particularly in the electronics sector, of which you paint a very depressing picture, Scotland-wide and UK-wide—what would you say? If you were a legislator in Scotland, what top three action items would you take to bring about a step change in commercialisation?

**Professor Beaumont:** The electronics industry—and possibly others—needs an intermediary body between the universities and the industry, to support the technology transfer process from the universities to industry and to help industry to upskill. There has been a great deal of talk about the closure of the Motorola plant in Bathgate and about the industry's need to upskill. We need to consider the mechanisms that will allow us to do that. There is a huge difference between the sort of research that is going on in universities and the sort of research that would really make an impact on industry in Scotland. There are problems relating to funding and access to the right sort of personnel. A different type of body is needed to deal with those.

15:15

**The Convener:** Are you talking about a US-style electronics research institute?

**Professor Beaumont:** Yes. There are a number of examples of such a strategy working successfully on the continent and in Canada, to which I alluded in my submission. Coupled with mechanisms for leveraging in industrial funding and public-sector research funding, that strategy seems to have brought about a dramatic change in the attitude of the academic sector towards commercial or applied research.

I am not sure whether this is a legislative point, but we also need to consider the question of career development for academics. At the moment that is focused strongly on publication, rather than on a close engagement with industry, which can lead to publication being either eschewed or delayed. I know of academics who have been discouraged from doing commercial research because it will not be good for their career development. It might also not be good for their department, because of the potential attrition of expertise. That is another issue that we need to address.

**Professor Lane:** I support many of the points that Professor Beaumont has made. The biotech industry is in the process of being created. Its products could be designed and produced here. They might be manufactured in bulk elsewhere,

but the real value is created in the generation of products—something that small companies can do.

The key barriers that I see are as follows. Because there is now funding pressure on universities, they have started to look to commercialisation for short-term returns. However, when creating an industry one must look forward five or 10 years. Universities need schemes that will compensate them for the effect of commercialisation over that time scale. It is crucial that we have schemes that encourage entrepreneurial academics. Universities do not want to lose those key players, so there must be support for such activity.

The other problem area concerns intellectual property and the commercialisation process. I know that some support has been given, but we need to improve the commercialisation offices. There needs to be much better understanding of the value of intellectual property and of equity share in new companies if new businesses are to be nurtured. There is a tendency to tax new businesses immediately—to demand 100 per cent overhead for using a bit of laboratory equipment, rather than to take some shares that might gain value downstream. We need to put in place a good business model for the development between universities and companies.

Misunderstanding the value of intellectual property is a big problem. Most of the work with which I deal is at a very early stage. The value lies in the inventor and their willingness to exploit their invention and it is hard to put that into a patent. The real value of intellectual property needs to be recognised.

The commercialisation process also needs to be formalised. I can envisage ways of doing that. At the moment, each academic in my sector must reinvent the wheel. I might go through endless months of negotiation to establish the basis on which I can start a company, but when my colleague wants to do the same thing, the process begins all over again. That is a UK-wide problem.

We need to do something to facilitate commercialisation. Until recently, the University of Cambridge had a completely open policy. It told academics, "You own the IP, so go off and do things. Ten years later, when you have made your billion dollars, we will write you alumni letters asking you to give us the money back." That is closer to the attitude that we need. If we try to capture things too early, we will not get the real benefit. In the US, companies are pouring money back into the institutions that created them. We need to lengthen the time scale over which we seek a return.

**Brendan Hyland:** I agree with the points that

have been made. I bring three areas of focus to this. The first is my concern that the metrics that are used to measure academic research are probably fundamentally wrong for our society. What you measure is what you get. We measure the number of papers that people publish so we get lots of papers. I do not believe that the number of papers that is published contributes materially to the value of this society. I would like a significant shift in the focus of RAE funding from pure and basic research to applied research, with a clear definition and—if possible—an imperative that that is a precursor to the commercialisation of the research, whether that occurs in Scotland, the UK or elsewhere. As a rule of thumb, I envisage a 70:30 split: 70 per cent of Government-based funds focusing on applied research and 30 per cent on pure or basic research.

The second generic issue is to lower the costs of transferring technology from the university environment to the commercial environment. In my submission I identified that Kymata had two markedly different experiences with two universities in transferring technology from those universities. The common denominator was that both processes were extremely costly. They were inordinately costly at one stage; indeed, we nearly closed our business down because of the financial costs of transferring the technology. I would like the imposition, if necessary, of a common approach by universities in Scotland. That would involve agreement on a common set of procedures and protocols that are designed physically to minimise the cost, in terms of cash and time, of transferring technology from the academic institutions to commercial organisations. It is relatively irrelevant what type of organisation—start-up or more mature—they are transferred to.

The third area is an issue that is probably more complex and embedded in the structure of commercial backing in our society. In north America, especially in silicon valley, many of the best VC groups—the top flight VCs—have been founded and are led by entrepreneurs or technologists. Many of Europe's VCs have spun out of banking institutions and are led by bankers, accountants and lawyers. Therein lies a fundamentally different mindset and depth of understanding of the businesses with which they seek to work. The silicon valley VCs understand what is needed if one is to work with a bright and capable academic individual who has some cutting-edge ideas. They understand how to turn such ideas into real businesses. They help individuals to craft business plans and, if necessary, they write the plans for those individuals.

The approach in Europe is much more that the VCs expect the business plan to be handed to

them on a plate. Why? It is because to a large extent they do not really understand how to write a business plan around an early-stage business. To put it bluntly, they have not done it themselves. I would strongly encourage that we undertake a programme equivalent to that which was undertaken in the 1970s and 1980s, which focused on inward investment, except that this time we would seek to encourage inward investment of the venture capital community—the highest-quality VCs. In the same way that we sought to encourage the best-quality manufacturers to come to Scotland, I would encourage bringing the best quality VCs to Scotland, because they will repay that many times over with their ability to take individuals from different parts of the community and generate real, long-lasting businesses from those components.

**The Convener:** You made points in your paper about the need for greater volume of research and the scale of research in this country. The committee heard evidence from the director of research councils at the Office of Science and Technology a couple of weeks ago, who agreed that the amount of money that we need to put into commercialisation should be multiplied by a factor of 10 or 12. I presume that you are making the same point in your paper.

**Brendan Hyland:** No, quite the contrary. I have sought to argue that one of SHEFC's objectives appears to have been to increase the sheer volume of research activity, and that such an objective is fundamentally wrong. I would rather see an increase in the quality of research, particularly the sort of research that results in businesses that generate wealth in the local society and thus give something back to taxpayers.

**The Convener:** Part of that is to skew the balance more towards applied research.

**Brendan Hyland:** Absolutely. As for funds that are invested in the commercialisation process, I should point out that my experience has been markedly different and I make no pretence that my experiences of commercialisation are representative of all universities. However, I know of one case in which an inappropriate level of expenditure in the commercialisation process increased the transaction cost, which more or less killed the deal. I am not sure that such an approach adds any material value. I would rather see a model that was more akin to the University of Cambridge's model from many years ago, which was far more laissez-faire and brought people to the table.

The commercialisation process should be more oriented towards helping, educating and facilitating people in the research academic environment, encouraging them to meet people from a

commercial background, such as good-quality VCs and advisers, and letting those individuals set up and drive businesses. It is not a university's role to set up businesses or to act as a VC to fund those businesses.

**Miss Goldie:** Your expansion of the previous point has gone some way towards answering my question. Your paper lays great emphasis on a potential return to taxpayers, which is a concept to which I am not at all hostile. However, surely a balance must be struck to ensure that pure research that might be absolutely essential is not prejudiced. In the early stages, it might be impossible to prove that a pure research project has any commercial outturn in the immediate future. Do you accept that such a balance must be struck?

**Brendan Hyland:** Yes, but I should perhaps flag up something at this point. I am not sure of the exact numbers, but I think that the UK gross domestic product is about 5 or 6 per cent of global GDP. If we have a proportionate research and development base, that means a base that is 5 or 6 per cent of global research and development. As Scotland probably represents less than 20 per cent of UK GDP, our research base probably represents 1 per cent or less of global R and D. As a result, we should look outside Scotland to find the best pure research and then bring it into the country and apply it. Money is made and society is driven forward by applying, not by creating, research.

**Miss Goldie:** How can we break down the peer respectability culture that exists in our higher education institutions—the barometer of which appears to be publications—and make the academic attitude towards research much more attuned to what is needed outside in the enterprise world?

**Brendan Hyland:** The metrics need to be fundamentally changed. As Miss Goldie rightly pointed out, we currently have a peer review environment. Unlike my colleagues, I have not been exposed at any level of detail to a peer review process. However, my first-cut view of the issue is that the Scottish Government should take a much more dirigiste approach at a Parliament level, through close co-operation with Scottish Enterprise or SHEFC or whatever. It should focus its limited resources on certain key strategic technologies from which society will benefit and use that approach to set many of the metrics for key research areas in the community.

**Professor Beaumont:** The universities can be encouraged to take a more uniform approach to the way in which they reward and promote academic staff. As I said, I have come across a number of cases in which academics have felt that they are held back in the system as a result of

carrying out commercial work and applied research, rather than fundamental research that can be published. I believe that that can be addressed within the existing promotion systems if the universities are encouraged to adopt a uniform approach.

My experience of running the Institute of System Level Integration, which engages with four university cultures, has shown me that it is extremely important not to try to bolt on structures to universities. We must go from top to bottom in the system to bring about change. It is not a matter of SHEFC helping universities to put in place professional commercialisation organisations—we must encourage the university culture to shift in that direction. A change in the academic rewards structure would help considerably to move the culture in that direction.

There is a bit of a red herring with regard to the RAE, but that is mainly as a result of interpretation by the universities or the academic staff. The RAE requires only four high-quality publications over four or five years from each member of the academic staff. That is not a large amount of fundamental research, but it is assumed within the university system that there is a volume measure and that academics should go for broke.

15:30

**Professor Sir David Lane:** I support that. In principle, the RAE can recognise commercialisation of research. There are aspects of the exercise that are designed specifically to do that. The culture is that the exercise is assessing pure academic output, so people are looking in their submissions for that. They feel that, when the submissions are judged in peer review, they will be peer-reviewed by an academic group that has not received clear guidance about the role and importance of commercialisation.

Even though it could be said that a patent will count equally with a paper, it will not because the culture says that it should not. Similarly, a large industrial grant will be considered to be less difficult money to have “got” than a grant from the Wellcome Trust. Cyclacel has funded research in universities, so I know that the level of peer review that we impose on people whom we wish to fund in universities is exceptionally stringent. We will not waste our money. We expect people to produce in return for the money that we invest in them. I do not buy the argument that has been outlined.

There is still a sense in the academic community that industrial research money is not real peer-reviewed research money and that it does not count. It is felt that patenting is not equivalent to publication. However, it is reasonable to remind

the people who think that that a high fraction of academic publications are incorrect, such is the nature of the scientific discovery process, whereas patents tend to be much more stringently examined. In terms of a real measure, such matters should be incorporated into the process much more. It is probably only a matter of giving clear guidance to the people who are involved in the exercise.

Academics are a bright bunch of people and they will do what they need to do to succeed. If the money and kudos are put in the right pot, they will go after it but, at the moment, the right pot is saying, “Only do pure, blue sky research. Publish as many papers as you can. No quality measure is put on them except by an editor of a journal.” A better model could be obtained.

**The Convener:** Can I pursue the issue of the costs of technology transfer? What are the main cost barriers?

**Professor Sir David Lane:** In my experience, I have come across two severe barriers, one of which is time. That is an enormous barrier.

**The Convener:** Whose time?

**Professor Sir David Lane:** I draw attention to the time that it takes the university to reach a decision about the nature of the technology transfer process. I should like the decision to be made within a week. I am not casting aspersions on a particular institution, but it usually takes about a year to make such a decision and an opportunity is lost as a result.

The other barrier is valuation. That is a serious problem, which reflects a lack of commercial understanding. A piece of early intellectual property will be valued and 10 per cent of my company's shares will be wanted for a little piece of technology. Given that I was only being polite about asking for such technology, I then negotiate for a long time. By the end of the exhaustive negotiations, I will probably obtain that technology for 1 per cent, by which time I am hardly interested in it. A recognition is needed that my exploiting that technology in my local economy has enormous macroeconomic benefits to the research team that invented the technology. I am likely to invest in that research process as I am likely to engage the scientists as consultants and take on their PhD students in my company. However, that will not happen if I am told that it will cost 10 per cent of my equity to license the technology.

**The Convener:** So basically, the universities are being slow and greedy.

**Professor Sir David Lane:** Yes.

**The Convener:** We heard evidence from a witness from the Royal Society of Edinburgh who

wanted the research budgets devolved entirely to the universities so that they can decide what to spend the money on. You are saying that that would be a disaster.

**Professor Sir David Lane:** I can talk only from my experience, but the level of funding necessary to commercialise research in the biotechnology industry rises so high so quickly that it is not possible for university funding to reach the important value step. In my game, getting something into a clinical trial is a big value step for the people who might purchase it from my company. That costs about £500,000 per product. If it can be put into a more advanced clinical trial, it might cost £3 million per product. To imagine that universities can advance that technology to that value step is hard. They cannot. It is hard to think why they would choose to invest in that essential development process. If those processes are to be developed, they must engage global capital—venture capital and, ultimately, the stock market. We must consider where the value steps are in the process.

**Professor Beaumont:** If research budgets are given to the universities, the money will be spread thinly. If you want to use research in a strategic way for the development of industry, there will be a problem. As I said in my submission, although Scotland and SHEFC can invest money largely in infrastructure, when it comes to research the distribution and prioritisation of the money is controlled elsewhere by the research councils and so on.

Scotland must get hold of a pot of money that it can direct for strategic development. Brendan Hyland mentioned the need to focus. Scotland must get hold of a pot of money that it can direct for strategic development. Brendan Hyland mentioned the need to upskill several key technology areas and move them up the value chain. If you want to do that, you have to identify and control some recurrent funding. If the money is given to the universities, it will be a Buggins's turn distribution of cash to whoever argues the loudest.

**The Convener:** Are there any specific measures that you recommend SHEFC should take to speed up the decision making of the universities and make them less greedy? The picture that you paint is the other extreme from the University of Cambridge or the United States experience. From what you are saying, the slow decision-making process is a key part of the reason for the failure of commercialisation in this country. How can we encourage the universities to speed up their decision making?

**Professor Sir David Lane:** We have to incentivise the process and make it clear what is expected from the universities. If they fail to

perform, that should show as another measure of their performance.

**Professor Beaumont:** We must also consider the reasons why the universities are being greedy. One is because they regard commercialisation of research as a way in which to solve their funding problems. If there were a way of coupling incentives back into the universities for commercialisation, that could help in several ways. It might speed up the process and help the universities to protect themselves against the effects of commercialisation, which, as I mentioned in my paper, can be an attrition of skills. If there are fellowships or other streams of funding that are connected with the commercialisation process, they could be seen as an incentive by the universities to speed up the whole process.

**Mr Duncan Hamilton (Highlands and Islands) (SNP):** Convener, your last couple of questions covered some of the areas that I wanted to talk about. Professor Lane, I wish to be absolutely clear about what you said about the model for universities taking more of a risk on the return. As for the University of Cambridge model, you asked for flexibility, for a longer payback period and for the university to take that risk. Presumably, that would depend on the type of industry and the financial position of the university. I am sure that you can understand why, when many institutions are cash-strapped, they would be loth to take that jump. I do not understand what you are suggesting in terms of an incentive scheme that would allow the universities to take such a risk.

**Professor Sir David Lane:** If a university is dependent on funding from SHEFC, one can imagine a system in which SHEFC rewards those universities that encourage successful businesses. For example, if an academic starts a company, that person's salary is replaced by an academic appointment. That means that the university does not risk losing that position to the commercialisation process.

**Mr Hamilton:** Would SHEFC take the risk?

**Professor Sir David Lane:** We are trying to promote Scotland's economy. After a careful assessment of a business start-up, one can usually see who is likely to be successful and can make a choice. There could be a competition. We could say, "We will replace 50 positions and universities can compete for them."

**Mr Hamilton:** On the one hand, I completely understand and accept what you say about venture capitalists who perhaps do not have the expertise or knowledge of a particular area. On the other hand, by pushing the risk back up the chain towards SHEFC, you are asking it to take that risk on businesses that may or may not be successful.

What is the assumption behind that suggestion other than that it has the expertise to make such a decision? I am not sure that it does.

**Professor Beaumont:** I am not too clear why SHEFC would be taking a risk. We are suggesting not that it should fund the companies, but that it could couple some of its funding to the process of commercialisation. All it would do is make further investments in the research base, in areas that are commercially active. That can only help to develop further that research base and focus on economic priorities.

**Mr Hamilton:** I understand that, but the replacement money would be, in a sense, sharing the risk on behalf of SHEFC. It would be making up for the gap that would be created by the institution taking the risk. I am slightly confused why SHEFC would be in a position to back those departments on the basis of an incentive that may or may not be successful.

**Professor Sir David Lane:** This particular issue is an acute problem and we must come up with a solution. In their current financial condition, the universities find it hard to reach a solution. If necessary, funds can be redirected rather than new money being provided, but funds must be targeted towards encouraging such a process.

**Mr Hamilton:** You referred to the differential in staff salaries. What differences were you talking about?

**Professor Beaumont:** Let us consider starting salaries for academics. For a lecturer with a PhD, the salary is between £18,000 and £19,000. An electronics engineer graduate can earn £25,000 plus. There is a considerable difference in salaries.

Other factors must be taken into account. We want more students to stay on at university and undertake research. Students are taking a major hit on their bank balances by staying on at university and undertaking research for £8,000 or £9,000 a year.

**Mr Hamilton:** There is also the problem of people moving to the United States.

**Professor Beaumont:** Indeed.

**Mr Hamilton:** The differential between Scotland and the United States is enormous.

**Professor Beaumont:** Absolutely.

**Mr Hamilton:** You suggested supporting a joint academic industry post. Do you consider that that is a realistic measure? Will it make up the huge gap between here and the United States?

**Professor Beaumont:** Joint appointments can be successful. I have experience of them, partly encouraged through the Alba Centre, which

seems to be keeping the former academic involved in the academic institution and enabling research to continue that otherwise would have been completely lost to the university. Such a suggestion is not fanciful.

**The Convener:** Thank you for your written and oral evidence. You have put forward some radical ideas and I am sure that we shall seriously consider them.

**Brendan Hyland:** Mention has been made of universities seeking too high a stake in companies. We experienced quite a different process. I accept that everyone will have a slightly different experience. The universities that we dealt with were not greedy on the equity front. The problems that we faced were due to the transparency of the process that was being followed. I strongly encourage a set of common guidelines to be prepared for universities so that universities can improve the transparency from both the internal academic and commercialisation standpoints.

I want a set of rules that people within the universities understand as well as those who want to commercialise the technology. If the region can demonstrate that it is lowering the cost of commercialising technology, we shall entice the best venture capitalists, because they will see that it is relatively easier to do business. It is believed that it is difficult to do business with Scotland and that reputation has gone overseas. It must be reversed.

**Professor Sir David Lane:** I strongly endorse that point.

**Professor Beaumont:** That goes back to my point about needing to engage the universities from top to bottom. The decision chain in universities is not simple. It is not a matter of the university agreeing to commercialised research, but heads of departments, deans, academics and Uncle Tom Cobleigh and all are involved in the decision. If the process can be speeded up by a streamlined arrangement that is fully understood, articulated and communicated throughout the academic sector, that would be a useful development.

**The Convener:** That is a useful recommendation. We now move back into private session.

15:45

*Meeting continued in private until 16:33.*



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