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PRESENTATION/DISCUSSION SUMMARY

Growing the Scottish economy; what role does innovation in products and services have to play?

Held at The Royal Society of Edinburgh on 24th September, 2008

We are grateful to the Institute of Physics and The Royal Society of Edinburgh for supporting this event.

Chair: **The Earl of Selborne KBE FRS**
Chairman, The Foundation for Science and Technology

Speakers: **Jim Mather MSP**
Minister for Enterprise, Energy and Tourism, Scottish Parliament
John McClelland CBE
Chairman, Scottish Higher Education Funding Council
Dr. Michael Harris
Research Director, Innovation Policy,
National Endowment for Science, Technology and the Arts (NESTA)

MR MATHER said that the Scottish Government's policy on innovation was driven by the need to improve the performance of the economy in order to raise the growth rate - at present 1.8 per cent against 2.3 per cent for the UK. Stasis was unacceptable this could not be done without a better understanding of the needs and wishes of the customers - the Scottish public. It is they who must define the objectives to be pursued; and it is their views which should govern adaptation, improvement and exploitation of opportunities. The Government had initiated a series of conversations to obtain this evidence, and was now taking these conversations into industrial and other sectors, including suppliers and customers. This should lead to greater openness and willingness to share information and cross-sectoral collaboration. Successful innovation depended on companies knowing what would sell; only then should they design and commercialize the product or service. Innovation was not limited to one function - it should be seen as part of an overall system with both the private and public sector meeting public satisfaction through continuous development.

MR McCLELLAND defined innovation as consistent incremental improvement of performance. Sometimes there were major ground breaking new developments - such as the easyJet business model - but most innovation started from products and processes that already existed.

It was not rocket science. He outlined the "innovation treadmill" which included all stages from the bright idea through funding, research, product development, marketing sales, customer management and analysis. This process should lead to a new cycle which would end the life of existing products and encourage the development of bright ideas for the next. In good companies some 20 to 50 per cent of sales came from innovation in products and processes. But the intellectual, management skills and financial resources necessary for product development and commercialization must not be underestimated; Scotland had some of them but lacked others - notably in marketing and sales. But the most significant lack was in entrepreneurship itself - the calculation of risk and the willingness to assume it. The Scottish attitude contrasted strongly with attitudes he had noted in the US.

MR HARRIS said we were in a time of transition and in such times it was fundamental to define and understand the direction in which you must travel. The linear model of innovation - research, development, and marketing - was now superseded by more sophisticated models which looked at the stages simultaneously. Crucially, the system needed to start with an understanding of what customers wanted - what would sell - and then work on all the stages of meeting these wishes. As both Mr Mather and Mr McClelland had said, research, development marketing and sales were elements in a comprehensive system. Multi-disciplinary teams, looking for information and best practice beyond narrow corporate or national bounds were essential. Government regulatory and other policies needed to ensure that competition thrived - the need to outperform ones' competitors was a vital driver of innovation. Of course a strong science and technology base was crucial, but innovation in service and creative industries did not necessarily start from such a base. First questions should be: what do customers want and how can we supply them better than our competitors? Then consider: what do we want to change and how do we go about it? Innovation applied to all sectors - public, private, and the third sector. The challenge was to marshal innovative practices to meet not only narrow corporate or departmental goals but also to bring them together to help meet grave social and economic problems such as climate change and financial disruptions. Government policies should concentrate on developing aggressive national strategies which would focus on specific sectors, including both large companies and SMEs.

Two leading themes emerged in the following discussion. First, whether there was a distinctive Scottish culture which was, if not inimical to, at least unsupportive of entrepreneurship, and, second, the relationship of academia with business and the process of knowledge transfer.

A number of speakers agreed that there were, indeed, features of the Scottish culture which did not favor innovation as described by the speakers. First, and most important, was the lack of enthusiasm (some speakers used stronger terms) for entrepreneurship - taking risks and accepting that, in some, cases, there was bound to be failure. Unlike the US culture, failure was regarded as shameful, not as a basis for trying again. There were other features as well - a reluctance to understand that product development, marketing, and awareness of customers wishes were as much a part of innovation as new technology and needed resources devoted to them. In some areas - marketing and sales - there was not a sufficient supply of skills - perhaps because marketing and salesmanship did not have the status of traditional professional vocations. But it was the risk averse culture that was at the root of the unsatisfactory Scottish economic performance. There were many reasons for this bias, such as the severe decline in traditional Scottish industries (industries which, in the nineteenth century were notable for innovation), the fact that the growth in financial and other services was very recent, the heavier dependence in Scotland than in England on public sector employment, and - perhaps, the overemphasis in the Scottish educational system on “pure” science and research. It would take time to build a cohort of entrepreneurs who could inspire and help others.

However, this culture also had some admirable features which must not be lost, such as the admiration for intellectual endeavour, the acceptance of hard work and the ability to work in teams for common goals, involving communities as well as companies. The efforts of the Scottish government to bring about a better understanding of innovation were applauded. But more needed to be done to correct the anti-entrepreneurial bias. A particular weakness was in training and skills at the artisan level, where innovation in practice was important. In Germany, for example, artisans had the training and skills, not only to do their job but to think about and work on developments - and were encouraged to do so by management. There was still insufficient understanding of what product development and, in particular, the management of product development, meant. Would a first class business school, such as Said (Oxford) or Judge (Cambridge) help? The heart of innovation was trained, skilled staff motivated and managed to be inquisitive and willing to take risks.

There was an animated discussion about the relationship of academia and business, and how knowledge transfer could be improved. Some speakers felt that it was unreasonable to expect academics, whose jobs were basically to be researchers and teachers, to be experts in the demands and problems of businesses, and to initiate themselves programmes of transfer of knowledge to help meet those demands. But, on the other side, how could businesses know what help could be given to them by universities unless the universities made themselves much more open and approachable, and were able to discuss work with them on some understanding of commercial constraints and opportunities. Flexibility on both sides was necessary; as one speaker put it, it was not a question of who should initiate knowledge transfer, but that both sides should facilitate it. It would be particularly valuable if it were easier for people in either the private or public sector to become more involved in academia - perhaps by part- time posting, which would give them a better understanding of what universities could contribute, and how they might organize themselves to do so. They might, for example, be able to challenge the view (expressed by one speaker) that product development was simply not interesting enough to engage an academic's attention. There was more agreement on the view that academia had not appreciated sufficiently quickly that innovation in services and creative industries was different from innovation elsewhere, and that product development, and marketing were areas in which they could offer help. Again, the German practice of combining research and development in the same institutions could be a valuable guide. The initiative of the Royal Society of London in setting up an Enterprise Fund which would provide funds to develop and commercialize new projects and processes was welcomed.

There was some concern that the speakers' emphasis on aspects of innovation other than initial research risked devaluing the importance of developing new ideas through research. While it was important to ensure that anything in the pot was properly cooked and served, the pot would soon be empty if not continuously refilled. But, it was suggested, this concern was misplaced. New ideas stemming from research were crucial; but academia and business would produce them, even if they did not at first sight appear to have a commercial application. It was the understanding of what customers wanted, and the process of knowledge transfer which would drive which of these ideas would go forward.

Sir Geoffrey Chipperfield KCB

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See the next page for a summary of the key points from the round table discussion that preceded the evening debate.

A round-table discussion was held during the afternoon on the same theme.

Points made in the discussion were:

1. innovation policy was now in transition due to: 1) increasing complexity of policy; 2) the breadth of sources of innovation; and 3) international competition to develop country specific approaches

2. innovation systems could be considered to behave like complex ecosystems, who's behaviour was non-linear and hard to predict. Attempts, therefore, to intervene in narrow areas were unlikely to work, and interventions needed to have broad impact. These ecosystems were also often buffered against change unless some underlying boundary conditions were changed.

3. the public sector had a role in stimulating innovation through its procurement policies and its own service delivery, as had been successfully demonstrated in the USA.

4. Innovation could not be measured simply by levels of research and development.

5. There was a risk, given the current financial collapse, of businesses feeling that the risk of innovation was too great, resulting in a reduction in innovation and resulting economic growth.

6. Regulation in the bioscience sector was constraining innovation in smaller, more innovative, companies due to the regulatory costs of product development in these areas.

7. There was a need for innovation policy to facilitate the development of small, micro companies which were often the most innovative.

8. External factors were often more important to company innovation that internal levels of R&D, as demonstrated by the current credit crunch.

9. The cost of product development was ten times that needed for research, and the cost of sales and marketing was ten times greater again. These were the areas that effort needed to be made, and were innovative approaches could be tried.

10. Scotland needed more innovation in the business sector, with the development of a top quality business school as a possible means of engendering a culture of innovation. This could be based on a pooling of the Scottish University Business Schools, and the Royal Bank of Scotland business school.

11. Despite a sophisticated angel network, Scotland lacked a deep pocketed venture capital community will to invest in spin-out companies. In the past this reflected the lower returns from the technology markets than other stock markets, but the recent collapse in the main stock market could make the technology markets more attractive.

12. Universities produced graduates with skill sets not used by industry and there was a need to develop student's innovation skills, as was being done in Finland. However, small start up companies were a training ground for young graduates, with many using their experiences to start up their own companies.

13. For universities, returns on commercialisation activities were often negative, and therefore the reasons for undertaking such activity were not economic benefit, but raising the status of the institution, or staff development.

14. Innovation was very important to the Scottish economy but there was a need for more SMEs to grow to medium or large size in Scotland. This could be facilitated by public procurement policies, or by "placing bets" and targeting support in key sectors.

15. Taxation should be used to further encourage innovation, and was not being used on a large enough scale. Current Capital Gains Tax changes were also now going to punish small entrepreneurs.

16. The financial services sector had not be receptive to government offers of assistance with innovation in the past, but following the recent financial collapse, they may be more willing to participate. However, Scotland's strength in financial services left it vulnerable following the recent events, and mergers could move centres of expertise out of Scotland. While the financial services sector tended to concentrate wealth in an economy, manufacturing acted to spread wealth wider, and perhaps a greater focus could be put in this part of the economy.

17. There was a need for more workplace development and training to develop leadership and innovation skills.

Dr Marc Rands, The Royal Society of Edinburgh