Introduction
The public discussion on science and higher education was the eighth in a series of ten events intended to Enlighten the Constitutional Debate in advance of the Referendum on Scotland’s future relationship with the rest of the United Kingdom on 18 September, 2014. The series is organised by the Royal Society of Edinburgh and the British Academy.

The speakers were asked to discuss the possible effects of Scottish independence upon the ability and ease with which students would be able to cross the border to take up higher education opportunities, and how this might affect the accessibility of higher education for people in the rest of the UK, as well as for people in Scotland. They were also asked to examine the future of research funding and how the UK Research Councils would decide to allocate funding in the event of Scotland leaving the UK.

Chair:
Ken Macdonald, Special Correspondent, News and Current Affairs, BBC

Speakers:
• Professor Rick Rylance, Chief Executive, Arts and Humanities Research Council;
• Professor Lindsay Paterson FRSE, University of Edinburgh, School of Social and Political Science;
• Professor Stephen Salter FRSE, Emeritus Professor of Engineering Design, School of Engineering, University of Edinburgh;
• Professor Chris Hawkesworth FRSE, Deputy Principal and Vice-Principal for Research, University of St Andrews;
• Mr Colin Macilwain, Editor of Research Europe and Associate Editor of Research Fortnight.

The debate was conducted as an open, public discussion seminar. This report provides a summary of the positions outlined by the speakers, and of the subsequent discussion.

Professor Rick Rylance,
Chief Executive, Arts and Humanities Research Council

Professor Rylance was concerned about disturbing “the delicate ecology” of funding systems that currently supports researchers in the UK and Scotland. How would independence affect the research infrastructure in terms of individuals and facilities, collaborative projects and the quality of assessment? Would Scotland lose the advantage it gains from being part of a wider scientific community?

He began by describing how the Research Councils UK (RCUK) is a UK-wide organisation that awards funds on the basis of excellence and open competition, decided through peer review by appropriate expert researchers on a project-specific basis. “They are thus not allocated on the basis of location, either geographic or political,” he added, although the RCUK does keep an eye on “distribution of national capability.”

Within the system, Scotland does exceptionally well when it comes to competing for funds, and this is a tribute to the quality of Scotland’s higher education institutions, as well as its research and researchers. The key point, he said, is that if we shifted to “a notional, normative distribution of research funds by research councils,” Scotland would lose, because it currently enjoys some degree of advantage under the 'dual-support system' that underpins the Research Excellence Framework. Block grants go to individual researchers and there is also local control by the separate administrations, including Scotland, England and Wales. It is crucial, he said, that even though the income is distributed unevenly, consistent methods and standards are applied to the allocation of funds – something which is good for the image of the UK as a whole. In addition, there is some direct funding from government agencies (e.g. the Ministry of Defence, the Technology Strategy Board [TSB] and the UK Space Agency), as well as other bodies such as charities (e.g. the Royal Society of Edinburgh).
Professor Rylance described this as an interlocking system – “a delicate ecology of research funding,” with a high degree of flexibility. And the proof of the pudding is the “good science” and the world-leadership of UK researchers in many areas, including the ground-breaking work done by our latest Nobel Prize winner, Professor Peter Higgs of the University of Edinburgh.

Professor Rylance then quoted several figures to illustrate how the UK punches above its weight in international research. The country has 1% of the world’s population, but spends 3% of the total research funds. The UK’s commitment to research produces 7.9% of all papers published, 11.8% of all citations and 14.4% of the world’s most-cited papers. And this means the UK is a “major world power” in terms of research, and highly productive in terms of original research and value for money.

It is tempting, he continued, to see a correlation between the flexibility and the variety of funding and the results we produce. It does set a benchmark against which to measure any future changes. The approach to funding includes judgement of excellence according to common standards and methods, and there are also “nuanced methods for distributing by volume at a devolved level.”

Professor Rylance then addressed a number of issues which would have a major impact on the funding of research in the event of Scotland becoming independent, including critical mass, the quality of research and access to facilities.

Considering the excellent record of UK researchers, Professor Rylance cautioned that there were several issues and “risks to guard against” if the current system were changed, whatever the result of the Referendum. If Scotland became independent, administrators of research funds would have to be mindful of disturbing the system under which we apply common methods and standards to funding. It is not just about the mechanics of the system, he said, but the advantages we gain from peer review by a much larger pool of scientists. If this pool were reduced, it would be harder to reproduce the same level of expertise, as well as harder to refresh and distribute the workload. It would also be harder to maintain our “powerful UK-wide reputation,” since every institution in Scotland and elsewhere profits from the international standing of the UK as a whole. “We all get a boost from the fact that the UK is generally good,” he said.

Professor Rylance also said that there were benefits to being part of a sizeable competitive system, and that a smaller system might put this in jeopardy.

The trend in the UK and around the world is towards a greater concentration of research and the creation of centres of excellence, pooling research and resources. “It’s a big-player world,” he said, and collaboration is increasingly seen as key to success. Collaboration is also something that Scotland is good at, he added, and has pioneered a number of initiatives; but collaborative projects have not just been established within Scotland’s borders but also operate cross-border – for example, out of the 1,100 grants awarded by the Engineering and Physical Sciences Research Council, about 400 involve collaboration between researchers in different areas of the UK. In the Arts & Humanities sector, there are similar cross-border projects, such as the Copyright Centre in Glasgow, and the Hub for the Creative Economy in Dundee.

Access to advanced national facilities may also be affected if Scotland became independent. Most of the important facilities used by Scotland’s researchers are in England, he said, and it would be “impossibly expensive” to duplicate these in an independent Scotland, while continued access to existing centres may not be so easy – for example, those funded by the Science and Technology Facilities Council (STFC) or the Natural Environment Research Council (NERC). There would also be an impact on the use of common facilities in other countries and international subscriptions – for example, the UK, not Scotland, is the partner in projects such as CERN. There are also implications regarding shared costs, and affordability. It would also be hard to reproduce the international networks of which the UK is a part – e.g. science and information – and build new relationships with international organisations in leading and emerging centres such as Delhi, Brussels, Washington and China, where RCUK has offices. We would need to “be mindful” of dismantling these networks if multiple systems were established, he added.

Professor Rylance then turned to the important questions raised in relation to research careers and training, and the flow of scientists across borders, sharing access to each other’s facilities and developing their expertise. “I personally would worry if we started to chunk up the supply chain in terms of people’s career development and the spread of talent across the UK research base,” he said.

Professor Lindsay Paterson FRSE, University of Edinburgh, School of Social and Political Science

Professor Paterson focused on four basic questions in the context of the current independence debate:

1. How good is Scotland’s higher education?
2. How international is Scotland’s higher education?
3. How ‘Scottish’ is Scotland’s higher education?
4. What political conditions are needed to enable Scotland’s higher education system to flourish?

In terms of quality, Scotland currently has four or five universities in the world’s Top 200, including one in the Top 20 and three in the Top 100. Scotland also currently competes very well for research funds, but the proportion of funds corresponds very closely to the number of academics who work here. Scotland’s share of research funds in the current academic year is about 10.7%, and Scotland employs 10.4% of the UK’s academics, slightly higher than our 8.5% share of the UK population. Similar figures apply to medicine, the social sciences and environmental science, with funds more or less proportionate to the number of researchers.

The healthy income earned by Scotland’s universities comes via its success in open competition, rather than from institutional grants. And this suggests that it is driven by the “autonomous efforts of academics,” competing on a level playing field with other academics in the UK. For example, medical researchers last year won 15.3% of the funds available from the Medical
Research Council (MRC), up from 10.2% two years before, while their share of institutional grants fell from 9.9% to only 4.5%, over the same period.

To maintain the international quality of our research base, Professor Paterson added, we must maintain our access to international funding and maintain our international standards. To do so, it has been calculated that an independent Scotland would need to find an extra £300 million in funds per annum – double the amount currently distributed by the Scottish Funding Council.

How international are Scotland’s universities? Professor Paterson said the great fear was that Scotland would become more parochial if it became independent, and drop down the international league table. Scotland’s academic researchers do relatively well by UK and international standards, according to its GDP and number of researchers, but countries such as India and China are now on the rise. This is important, he said, because in our efforts to attract international academics and students, we should remember it is now a global market.

Scotland has a high proportion of researchers relative to population, he added – 4.1 researchers per 1,000 people, compared to only 2.8 researchers per 1,000 in the UK as a whole. Scotland’s researchers also produce 2.5 times the number of academic papers per head of population, compared to other countries of a similar size, “and our papers are noticed,” he said, with a disproportionately large share of the most-cited papers. Putting this in perspective, however, Professor Paterson pointed out that almost half of these papers, by 2008, were co-authored with researchers outside the UK, including small countries such as Israel, Switzerland, Belgium, Denmark and Finland.

Another major challenge is to attract leading academics from abroad. “The market for academics is global,” he said, and half of our academics are from outside Scotland, with a quarter of those being from outside the UK. Scotland’s universities are, therefore, “already on the world stage,” he continued.

There are also major intellectual benefits from international student flow. Since 1975, there has been a fivefold increase in the worldwide number of students enrolled in universities outside their country of origin, especially students from developing countries. The EU also accounts for a large share (25%) of students moving abroad, and Scotland has a relatively large share of these compared to most OECD countries – currently about 14.6% of first-degree students. This is lower than the UK as whole, (18.3%) but more than four times the proportion in the USA, and also much higher than Sweden (7.5%), Ireland (5.9%) and Norway (1.4%). If Scotland became independent and students from England were included in this figure, the proportion would rise to almost 28%, very high by international standards.

Adding together Scotland’s performance in research and its ability to attract international academics and students, Scotland has a good reputation, but in an independent Scotland, would this high proportion of “foreign” students be considered too high and sustainable from a political or cultural standpoint, even though most people agree there are cultural benefits? There are past precedents of high foreign intake of students or other academics becoming an issue in other countries in Europe (e.g. Austria and Belgium), particularly in individual departments, but the legal position today seems to be that restricting foreign intake would not be possible. What is not unusual, however, is the fact that half of the “foreign” students in Scotland come from its neighbour, and recruiting 28% of student intake from outside our borders is not unusual.

Professor Paterson put this in context by saying that although there was a period of “unusual parochialism” in Scotland from the 1960s to the 1980s, with regard to foreign students, we have a tradition of openness which dates back to the 18th Century, when many people came north from England to Scotland to study. Unlike other smaller, newly-independent states, Scotland also does not have a problem with language, and there is not “significant unmet demand” for university places among Scottish people, even during periods when the number of students from outside has grown. It is likely that, by international standards, there will always be a high level of students from outside, but this is not without precedent or parallel. It has been alleged in the past that taking in too many academics from outside may “undermine the Scottishness of Scottish university traditions,” but according to the evidence, “academic activities, values and achievements are similar, regardless of origin.” For example, the “incomers” also want our universities to be public institutions and they want them to play an active international role. Our allegiance to this international mobility is not just a “romantic attachment to the democratic intellect”, but because this dual support of public good and international networks is the norm in the world’s most influential academic market, the USA.

Professor Paterson then discussed what political conditions were needed to enable Scotland’s universities to flourish, and focused on the issue of academic autonomy, and Government’s traditional respect for this when it comes to funding. In Scotland and the UK as a whole, the level of autonomy is already high in terms of selection of students and staff, as well as in the design of the curriculum, and this helps to maintain the quality of our academic research base. “Since Scotland’s academics are already autonomous, independence would not make much difference,” he said, unless there were major shifts in economic, fiscal or social policy. Education policy is already devolved, he added. Student fees would not come under education policy, but would be an economic and social decision, and this is already devolved.

Finally, Professor Paterson defined the paradox at the heart of the constitutional debate, with arguments for and against independence, as regards the future of research and education. Our successes to date may encourage the belief that independence would enable us to achieve even more. On the other hand, these same successes may encourage the belief that things are good as they are, so we should stay that way. If Scotland were to become independent, academics would still need to argue for funds and compete to attract global talent. Issues such as academic freedom and autonomy would still be on the agenda, but there is no sign that these
principles are seriously under threat from either side of the political divide. “Ensuring these things if Scotland became independent would require political goodwill, as much from politicians in the rest of the UK as from those who would be governing Scotland,” he concluded.

Professor Stephen Salter FRSE, Emeritus Professor of Engineering, University of Edinburgh

Professor Salter began by addressing the issues from a personal viewpoint, describing his own frustrating experience in applying for research funds. He then suggested that if the present SNP policy with regard to higher education continues after a ‘yes’ vote, scientists and academics have no cause for concern. Scottish universities could continue to punch above their weight, and the £300 million funding gap could be easily dealt with by cutting the defence budget.

Referring to a recent article in The Independent, Professor Salter said it was “deeply symbolic” with regard to per capita NHS spending. According to the article, the health of people in southeast Hampshire starts to decline at the age of 68 years, compared to only 58 years for people in Sunderland. However, spending in Hampshire is to be increased by 14%, while spending in Sunderland will go down by 11%. “That really hurts,” said Salter, adding that it also makes him feel “ashamed.”

“The level of compassion in the NHS in England is somewhere wrong,” he continued. “I want to be governed by people who have more compassion than that and I want them to exercise it efficiently.”

Moving on to higher education and science, Professor Salter quoted the First Minister Alex Salmond, who declared (courtesy of Robert Burns) that “the rocks will melt wi’ the sun” before Scottish students are required to pay university fees, like their counterparts in England.

Professor Salter then said he would focus on his own experience, particularly in the field of renewable energy, even though other disciplines may lead to different conclusions. “Engineers can only stand in awe at the achievements in fields such as medicine in Dundee,” he explained.

Most of the funding for Professor Salter’s projects comes from Brussels, he said, including collaborations with people in the US, Australia and Norway. The Internet makes communication easy, and the world of science now is one big melting pot. “We don’t worry about borders,” he added. But his experience of seeking research funding from UK sources had been “miserable”.

In Professor Salter’s experience there is insufficient knowledge of Scotland in the UK research councils. As examples, he quoted the fact that assessments of proposals for research in wave energy are assessed by ‘the nuclear people’ at Harwell (the UK Atomic Energy Authority) and pointed out the lack of understanding, possibly wilful, of the conditions in the Pentland Firth.

Professor Salter said that there is sometimes a different kind of problem when applying to UK research councils for funding. According to the current rules for EPSRC funds, an unsuccessful applicant can’t re-apply for funding for the same project, and this applies even retrospectively (i.e. before the rules were changed). Professor Salter thinks that “this is punishing people who are thinking ahead.”

Professor Salter said that “many people in universities are not happy” with the current funding system, he added, expressing concern that “hardly any people who apply for academic jobs today are from the UK.” There are very good applicants from China, India and eastern Europe, he said, but no-one from the UK wants to apply to work in a UK university any more.

Professor Chris Hawkesworth FRSE, Deputy Principal and Vice-Principal for Research, University of St Andrews

Professor Hawkesworth said that he came to St Andrews in part because of Scotland’s reputation for valuing research and education. One of the things that interests him is “to ensure that leading academics and students have good reasons for wanting to be in Scotland for their research and studies.” He is also concerned about the uncertainty caused by the Referendum debate, which he believes is holding back investment and making academics (both researchers and students) wary of coming to Scotland. In his view, “it is difficult to evaluate how funding structures and opportunities will operate, whatever the outcome” of the Referendum debate.

Professor Hawkesworth then focused on three areas: the future of Scotland’s universities, their relationship with the UK Research Councils; and the challenges faced by universities in a small country seeking to play a big role in international research.

These are challenging times for all universities in the UK, he continued. There are concerns that without adequate funding, our institutes of higher learning will begin to slip down the world rankings: capital funding was cut by £600 million in 2010–11. For universities in a smaller country such as an independent Scotland, this would be even more challenging. To boost their income and “develop their positions,” many universities in England have increased student intake, but because Scottish students don’t need to pay fees, the number who can study here is capped, so increasing intake to secure their future would not be easy without increasing the proportion of students from the rest of the UK and elsewhere. This could lead to other problems.

The quality of the research done in Scotland is high, he continued, and our universities receive about 13% of the research funds available in the UK, compared to a UK population share of just 8.5%. This means Scottish academics generally get a bigger slice of the pie, but there is anecdotal evidence that smaller countries generally have smaller research communities and smaller budgets, which tends to lead to directing resources towards applied research rather than towards blue-sky research. He also questioned how a smaller community of researchers in an independent Scotland would be able to work under the Research Excellence Framework. “University departments have to be much more selective on what they prioritise than those in universities with higher-level
strategies,” he added. This would be a bigger problem if Scotland became independent, and the targeting of research into more selected areas would result in more low-quality, more narrowly-focused research being funded.

Much of the debate among academics so far has focused on the idea of an independent Scotland “buying-in” to a larger research fund, much like the current EU model, which invites researchers in member countries to compete for European Research Council (ERC) funds, but Professor Hawkesworth suggested that the dominant partner (i.e. England) would have more influence on how the funds were spent, and Scotland would thus lose its current advantage. Deciding how to fund industry-focused research would be even more challenging, since different governments would also have different priorities; for example, different policies on energy. Both sides may want to make the new relationship work but, as Andrew Marr wrote in his book The Battle for Scotland, “many initiatives on Home Rule crumbled in the face of Westminster resistance.” There is no guarantee that any future government in Westminster would be disposed to help an independent Scotland.

Another key issue is scale, he suggested. Internationally competitive researchers and students tend to prefer larger educational communities. There may be a diaspora effect, but most researchers would be attracted elsewhere, and Professor Hawkesworth described this by saying that given a choice between New Zealand and Australia, most researchers in his field would choose Australia.

Scotland’s universities are performing well at the moment, with three in the world’s Top 100, but Professor Hawkesworth suggested that this may reflect its position within the larger unit of the UK, which is second only to the USA in terms of academic reputation. He said that in the future, Scotland’s three institutions in the Top 100 might drop to just one institution, in line with other small countries such as Ireland, Denmark and Norway. The implication is that if Scotland became independent, he said, “it is hard not to conclude that fewer academics would want to come here.”

Finally, Professor Hawkesworth said it may be helpful to frame the argument by evaluating the worst possible case and the best possible case that might follow from independence. “Even the best reasonable case would be no better than today, and the concern is that the worst reasonable case will be different and is likely to disadvantage researchers in Scotland,” he said.

Mr Colin Macilwain, Editor of Research Europe and Associate Editor of Research Fortnight

Mr Macilwain prefaced his remarks by describing himself as a journalist, not a scientist, who has written a lot about how research funds are distributed in different corners of the world. He then said he took exception to the idea that the UK funding system is “close to perfect” and that Scotland somehow couldn’t do without it. He focused on four things which he feels are important in the context of the current debate:

1. the notion that many small countries perform very well on their own in terms of innovation;
2. the fact that the current research system in the UK has weaknesses of its own;
3. the neglect of R&D outside the remit of the UKRC;
4. the idea that sound research policy needs to involve “rapid and deft innovation, not self-congratulation,” to succeed.

Why shouldn’t a small nation deliver world-beating research? Some people argue that Scotland’s universities gain from the UKRC system because the scientists are competing for funds from a large pot of money, but Mr Macilwain questioned whether Scotland really gains from the current arrangement. When it comes to innovation, small countries generally do very well in international league tables – for example, Switzerland, Sweden, Singapore and Finland. “Small nations are the strongest scientific performers in Europe,” he said, and in the 2012 round of ERC starting grants, the best performers per head were Switzerland, Holland, Israel and Denmark. Scotland has a very strong tradition in research, but is not competing as well it could, he suggested.

There are no concrete plans for any changes in policy yet and the current funding system could continue, he said. Scotland could participate in the system as it functions today and pay for the awards it wins, as non-EU members such as Switzerland and Israel now do in EU research programmes, but if Scotland became independent, it could set up its own funding structures. Academics in Scotland are used to dealing with the UK Research Councils, but – like many UK-wide institutions such as the intelligence services – these are “not as good as they keep telling us,” said Mr Macilwain, and still suffer from “post-imperial hubris,” as if they don’t need to do anything except “exert their natural superiority.” They are also not as accountable as they should be, and are overseen by a “supine” Westminster committee system.

The autonomy of some UK Research Councils has also been curtailed in recent times, he continued, citing the case of the Medical Research Council. Even though it is one of the strongest research councils, its headquarters were closed down and moved to Swindon, shedding half of its staff on the way. The Science and Technology Funding Council and EPSRC have also had management problems. Mr Macilwain also cited the example of a recent announcement by NERC that it was opening up a new doctoral centre for oil and gas, but not in other energy sectors. “There is no way of getting to the bottom of the politics” of that decision, he added. “It was just something that happened.” So, are the research councils “state of the art?” Some aspects of their work are opaque and not accountable enough, and someone once described them as being staffed by “a strange mixture of gifted enthusiasts and disaffected bureaucrats.”

Whilst the UK Research Councils have a somewhat “old-fashioned take on innovation,” and their interaction with the public tends to be paternalistic, the Scottish Government has been “reinvigorated by devolution,” he continued. An independent Scotland would have to devise its own policies in applied areas such as agriculture, fisheries, forestry and energy, where its needs are perceived to be different, but the
UK Research Councils have “slashed and burned capacity” for these areas. Energy, for example, has been a victim of cuts, and this is a “major flaw” in UK policy. While David Willetts, the Minister for Universities and Science, has praised policy makers in the USA for their strong support of NASA and the Department of Energy, these are the very same areas where the UK Government has cut support in recent times.

Mr Macilwain then turned his attention to innovation, saying that today it was “less about patents, spin-outs and venture capital and more about openness and collaboration.” But the UK tends to cling to the old model, he said, unlike global leaders such as California, Denmark, Sweden and the Netherlands. He cited the computer games industry in Dundee as a good example of a more relevant approach to innovation in Scotland, but thought the TSB “had not yet got its head around that.”

After a tentative start, the Scottish Government has also proved itself an innovative policy maker – e.g. with regard to alcohol pricing and cigarette packaging. He then challenged opponents of independence to name a single policy area where the UK Government has really innovated in the last 20 years. The Government has recently invited China to help build new nuclear power stations in the UK, and Mr Macilwain wondered if this is an example of being “innovative.”

“Why should we believe that science and innovation – of all things – are best served by a system of government at Westminster which is effectively a closed cabal of special interests, incapable of innovating in itself?” he asked. Whatever the result of the Referendum, further constitutional change is coming and research and education in Scotland are heading down a distinctly Scottish path. We should consider our options carefully and openly, he said, especially when it comes to deciding our research priorities in areas of special interest such as public health, alleviation of poverty, energy, the natural environment, fisheries and agriculture. Mr Macilwain doubts that the UK could adapt or modernise enough to deliver for Scotland in these areas, and said that if Scotland became independent, “at least there is a chance it could” build structures of its own to promote science and innovation more effectively.

Discussion

1. The first comment came from a representative of the James Hutton Institute, “a world- leading research institute for land, crops, water and the environment” based in Dundee and Aberdeen. The Institute is not eligible for UKRC funding, but because of an agreement between the Scottish Government and BBSRC, it has access to some funds. It has been so successful, however, that the Institute can no longer apply. Researchers should therefore “be careful what sort of agreement is made” with the UKRC in the event of independence. Because of where you are and the history of your relationship with the Scottish government, you may not be able to apply for the same funds in future, even though you can demonstrate excellence. “We demonstrate excellence and we are punished for it.”

The Chair, Mr Macdonald, commented that this did not sound like an argument for the constitutional status quo, and the questioner responded that researchers have to “face the challenges.” Collaboration and engagement are the way forward, with institutions working together. The isolation of institutions – as a result of independence – could create problems. “Science is about innovation and this means collaboration between institutions and across disciplines, and we have to find ways to support this through the funding mechanisms that there are.”

Professor Hawkesworth said that these issues would be all up for negotiation if Scotland became independent, and said he is wary of the “asymmetry” that might result. Professor Ryalance said that he doesn’t want to defend the status quo, but agreed that the future of science is all about collaboration and organisations working together. There are protocols which govern allocation of funds, and such issues are currently being debated. Professor Salter said that the best way to stop collaboration is to have more researchers competing for funds under the current research assessment system. Nowadays, people don’t want to release ideas outside their own “charmed circles.” In the 1960s, he said, all academics helped each other, rather than being forced to compete, and he would like a return to those days.

Professor Paterson suggested that the current investment in research networks shows this is not true, citing the example of collaborative networks in Scotland. There are lots of ways to measure success, he continued, but partnerships across universities do pay off. Things are not perfect, but Scotland’s autonomous policies have also been a success.

Mr Macilwain agreed that these networks have been a success but thought that this does not rebut Professor Salter’s point about research assessment stifling innovation.

2. The next comment focused on the £300 million funding gap identified by many commentators. Either Scotland finds the extra money, or it partners with the rest of the UK and has “almost no say” over distribution of funds. Scotland has specific needs and striking a deal with the UK “is not a very good plan.” The funding gap has not yet been remotely addressed. In addition, “collaboration” is not “a replacement for cash.” This is merely a red herring that distracts attention from the funding gap. Would the residual UK disproportionately fund Scotland’s researchers in the event of independence? That would require a lot of good will on the part of those dispensing the money.

Professor Paterson suggested that competing for funds is the best way to raise the overall standards of research, but some principles would have to be established. Scotland would have to negotiate the terms of its contribution to a larger research fund, without expecting to get a fair return on its money, and be willing to compete fair and square with other partners. Good will may prevail, but that is not the way international collaboration tends to happen, he added. Professor Salter said £300 million could be saved from defence straight away, by ending the quest for a “more expensive ways of killing people.” Mr Macdonald commented that there are only so many times you can cancel Trident, and said that funding one thing always means reducing the budget for something else – a challenge when considering that Scotland currently receives 13% of UK research funds but only contributes 9% of total UK taxation.
3. The next comment focused on the numbers, and the different figures different speakers quoted in the course of the debate, including the figure of “9%” for Scotland’s total tax contribution. According to the speaker, the more accurate figure for “what we put in” is not calculated on the same basis as “what we put in”, because even though “what we put back” may be 9.3% of total UK spending, the actual sum is higher than the money raised in taxes. These figures are also not representative, the first speaker countered, because they do not take account of revenues from oil.

4. Describing his vision for research funds in a future Scotland, another speaker cited the example of the oil and gas doctoral centre set up by NERC and suggested that Scotland could go its own way, with funding organised along the lines of the “well-costed” US model. He also questioned the “need for size,” saying that in the 21st Century, it is more important to be nimble and focused on needs. “It’s agility that matters.”

5. If Scotland became independent, would some institutions drop down the world rankings and would Scotland lose out in the “innovation stakes?”

Mr MaciIwain said that some small nations do extremely well, citing the example of Switzerland and Singapore – both prime locations for postgraduate students. “We won’t disappear from the international map,” he added. Professor Hawkesworth asked what Scotland aspires to and pointed out that Switzerland allocates much larger funds than Scotland would be able to afford.

6. There appear to be advantages on both sides of the argument. On the one hand, we gain from the critical mass of the larger UK, and on the other hand we gain from the idea that “small is beautiful.” Scale isn’t everything, however, and the debate needs to go beyond these issues. Too many people take the positives and turn them into negatives. Scotland is successful at the moment in winning research funds, and if it continues to be properly funded, we’ll continue to compete, whether we become independent or not.

The critical question is to argue about the positive attributes of the UK, instead of painting a picture of Scotland in trouble. The evidence does not support that. The UK has value and the various parts of it working together have value, and Scotland should be seen as a valuable player in that system.

The emphasis on positives continued, with another comment highlighting the “invigorating effect of devolution” and the “positive benefits” of being part of the UK, suggesting the invigoration could continue, with Scotland enjoying the best of both worlds. Scotland should promote itself internationally in terms of its distinctiveness and as “a back door to the UK and Europe.” Devolution is “a process which is still going on,” and was also a solution to over-centralisation in the UK, which was bad for all its individual parts. To walk away from that and centralise everything again within an independent Scotland would be a backward step.

This led to a later comment describing the benefits of centralisation in certain areas such as public health, with different agencies working together for the common good in one central organisation. Perhaps this should encourage more links with England, rather than the opposite.

7. The debate should be about outcomes and evidence. In higher education, Scotland has done well per head of population and we should focus on what made us successful and will keep us successful. The key issue is what we would gain from independence and what we would lose. We could sort out the funding but what about the process? There may be “wishful thinking” on the part of some people who believe that going it alone is a better idea. Could Scotland really run a funding council of its own? Some researchers argue for a separate funding council for Scotland simply because their applications are rejected by a UK national body, but that is not a good basis on which to proceed.

8. What Scotland needs does not depend on independence or not. “More analytically,” what’s needed either way – in education, industry and research – is to move to the next stage. What aspects of the current system are most useful? What are the critical factors we need to consider, independence or not?

Professor Rylance said the positives are “glaringly obvious” – e.g. the imagination and collaborative spirit of Scottish researchers. And all of these things would persist, independence or not. There would always be an argument for focusing on areas of special interest, as well as some degree of “local” control.
9. What changes would there be if there is a 'no' vote and more devolved powers?

Mr Macilwain commented that the UK has concentrated all of its resources into the UKRC and “decimated” the rest of publicly-funded R&D funding. He also doubts that centralisation – e.g. to address public health issues – would ever happen at the UK level. Professor Paterson said that academics have a responsibility to point out how to avoid the worst effects of different political outcomes, as well as how to take advantage of potential benefits. He also said that since the 1970s, there has been a lack of self-confidence among academics in relation to the prospect of independence, as if we would suddenly throw away 300 years of tradition and not be able to survive on our own. In the event of independence, collaborations will continue and there will be cross-border traffic in both directions. That’s the way it is in the international market of ideas, he added. It is possible to avoid parochialism and continue to operate internationally. Will the inter-networks of researchers survive? “You need the good will of academics, not other governments,” he said. “We should stop talking down Scotland’s academia,” he said. We should talk about the positives and explore the possible scenarios, to realise the benefits of small-country innovation, whether we like independence or not. Professor Hawkesworth suggested there may be a “technical question” about scale, strategy and focus. If you “shrink your country,” would you become more focused, and would that be something you wanted? And if you bought into another country’s funding system, would you be able to influence how it is managed?

10. The next comment questioned the criteria for judging research, suggesting that it is not always innovation, but also personal glory and money, that motivates people. Maybe researchers should “ask what they can do for their country, not what their country can do for them.” Social deprivation, for example, is one area where Scotland’s academics could influence policy and help to deliver better services via more focused research. It would be useful to hear more about how we value research and “useful knowledge.”

Mr Macdonald asked: “Is localism parochialism?” The speaker replied that we also have to use international resources to solve local problems.

11. Another speaker commented that NHS funding in the UK has been steady for a number of years, and is currently worth £1 billion a year, with Scotland doing very well out of the total. “We have an ambivalent attitude,” he added. We pay into some of the UK schemes and get something back, but in other areas, we don’t have access to the larger funds available to researchers in England. To fund a clinical trial, however, we need access to larger funds simply because of the large sums of money required, and independence would make matters worse.