

The All Party Parliamentary Engineering Group

'Engineering for growth: meet the innovators'

Report of the debate held on 16 January 2013 in Committee Room 9, House of Commons

Chairman

Professor the Lord Broers

Speakers:

Margareta Pagano, Financial Journalist (Chair)

Dr Andy Harter FREng, CEO of RealVNC

Richard Palmer, inventor of d3o

Dr Eleanor Stride, biomedical engineer at the University of Oxford

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Introduction

Lord Broers welcomed guests and thanked the Royal Academy of Engineering (it is the first time the Group has been joined with the Academy to co-host an event). Lord Broers went on to emphasise the key role played by young engineers at these meetings and that they are vital to promote such lively discussions.

Lord Broers posed the question, "*How can we generate more entrepreneurs?*" He stated that it is essential to encourage engineers to start thinking about this at the start of their careers - "*this is what our competitor nations are going*".

The speakers were then introduced.

Margareta Pagano

Maggie began by stating that since the 'crash' a larger focus has been put on engineering and manufacturing, "*indeed the Government is doing a lot of work on this.*" However, she said there is still a feeling that we don't harness all the ideas out there.

Maggie then introduced the panel.

Dr Eleanor Stride

Eleanor talked about her "*unconventional*" entrance into engineering - being encouraged by her art teacher. She said that this is not as odd as it sounds as engineering holds a lot of creativity.

Eleanor then went on to talk about the research she does at the University of Oxford where she works on the use of microbubbles for medical imaging and drug delivery. She is currently investigating their application in the detection and treatment of Alzheimer's Disease.

Asked by Maggie whether she has a background in science, Eleanor said that she trained in straight engineering but works closely alongside biologists who help make it all possible.

Dr Andy Harter

Andy stated that it was pure curiosity that got him into engineering -“*I like to take things apart and put them back together*”. From an early age he had an interest in computers and electronics but more importantly he was encouraged to be creative and to ask questions.

Andy then proceeded to talk about his engineering career. He previously worked on VNC software system which allows someone to remotely access your computer. There are now over a billion copies of this software.

He also emphasised that mentoring is such a vital part of encouraging an entrepreneurial outlook.

Richard Palmer

Richard began by saying that he is an engineer that went to art school and that it is this creative outlook that has been really helped him. He went on to explain his invention - d3o - a soft flexible material containing intelligent molecules that lock together to absorb impact making it capable of holding its own shape (and gave a demonstration).

Richard then talked about where he got his idea from, stating that the range of facilities and people available whilst at university was key, as is “*perseverance and diligence*”. He stated that next one needs to consider what to do with the idea to make some value out of it. Richard said that when he was trying to sell his idea it was very difficult to convince them of its value. In their mind if there was a market for it they would have asked for it and therefore don’t need it.

The most important thing is to get people engaged with your product at an early stage and this means truly believing in your vision. “*It is all about creating believers and great stories; you have to capture the imagination of those you want to engage with.*” Richard stated that the whole process was a “*great adventure*” and a “*balancing act, going from creativity to analysis*”.

Questions and comments

How much **support and guidance** did you have and how much more could you have done with?

- There is academic support available through fellowships from organisations such as the Royal Academy of Engineering. These can be extremely useful in helping form an academic idea into something useful.
- The role of mentors can make the process a lot quicker. However, with mentors it has to be a personality fit, they also have to be inspired by what you do.
- Funding can be extremely difficult to get: “*venture capitalists are focused on picking winners*”.

The **Government** plays a key role in providing these opportunities to engineers. However, it also recognises that more needs to be done. A great challenge is addressing the question of how we go about **increasing the number of entrepreneurs**. It would help to find some common experiences, therefore are there any institutional challenges the panel has come across?

- There is the challenge of Government itself; it needs to change its approach to be something that facilitates passion, drive and effort e.g. sponsor places, provide more opportunities to develop young engineers etc.
- A lot of inventors don’t come from an academic background and can feel intimidated.
- “*Quantity breeds quality*” - you need 300 incomplete ideas to breed 2 great ideas.

- There needs to be a greater access to facilities, a system like a gym membership could be a useful model.
- The way science is taught in school can pose a hindrance; children are told they cannot touch the equipment; science lessons need to be more practical.
- The perception of engineering is obscured; young people need to be made aware of how encompassing it is.

Careers advice

- The standard of careers advice needs to be increased i.e. careers advisers need to be aware of engineering as a career option. This is particularly a problem in girls' schools.
- Advice can now be given via online requests, this needs to be taken advantage of.
- 'Role models' should come into schools and speak to pupils.
- There is a problem in that science teachers rarely have experience of engineering or manufacturing companies. They should be encouraged to visit industry and get some first-hand experience.
- All of this needs to happen early on in secondary school, preferably in Year 7.

Is there any less **innovation** than there was in the past?

- What can hinder this is the culture of trying to make as much money as quickly as possible instead of thinking of the greater reward and the entire development process. People "*sell out too quickly*".
- There is a different culture in the US in that they have a greater self-belief.
- "*The UK does have great ideas and sometimes selling out is the best way*".

Can entrepreneurship be taught?

- "*Entrepreneurship can be demonstrated and inspired but not necessarily taught.*"
- You can teach problem solving - which is a large part of it - but it shouldn't be packaged as 'entrepreneurship'.
- You learn more from your failures than your successes. In the US a 'failed' entrepreneur is a more attractive one, in the sense that it's all a learning curve, you've learnt from your mistakes and most importantly at someone else's expense.

Some tips for success:

- **Network** with people from other fields (especially finance). At events try and meet people who could be useful to you.
- "*Plan B is plan A with less time and money.*" You need to fundamentally believe in plan A and then you won't need a plan B and people do buy into that passion.

Conclusion

Lord Broers summed up the debate stating the "*importance of commitment and believing in yourself*". He stated that universities in the US encourage their students to get "*out and about*" and that universities in the UK need to do more of this. Lord Broers cited the example of Cambridge University and its "*great mentoring programme*".

Lord Broers concluded the meeting by stating that "*you need a lot of strength to be an entrepreneur*"; it is challenging but in the end hugely rewarding. He then thanked Jennifer Bryant-Pearson and the Royal Academy of Engineering for organising the event and the sponsors of the Group, citing them as "*forward thinking companies who promote entrepreneurs.*"