

APPG Breakfast Briefing – 10th December 2014

List of Attendees

Parliamentarians

Chair APPG - Mr David Mowat MP (Warrington South)

Mr Adrian Bailey MP (West Bromwich West)

Mr Philip Dunne MP (Ludlow)

Mr Steve McCabe MP (Birmingham, Selly Oak)

Mr Andy Sawford MP (Corby)

Baroness Gardner of Parkes

Lord Boswell of Aynho

Lord Brookman

Lord Davies of Coity

Guest Speaker Professor Michael Stacey, University of Nottingham

ALFED President Mr Simon MacVicker – Bridgnorth Aluminium

ALFED Members

Mr Colin Davies – Alcoa

Ms Diana Caldwell – Alupro

Mr Laurie Palmer – Arun Technology

Mr Ernst Wagner – Kasto Ltd

Ms Kate Ravenscroft – Novelis UK Ltd

Mr Paul Bowcher - Siemens

Mr Carl Tomlinson – Tomburn Ltd

ALFED Attendees Mr Will Savage, Aluminium Federation

Mr Ian Oliver, Aluminium Federation

Simon MacVicker opened the briefing by highlighting the recent growth in the use of aluminium, especially in aerospace and automotive industries – the new model Ford F150 utility vehicle being a good example. In the UK, the forthcoming Jaguar XE will feature extensive aluminium use, one of the factors behind the recent creation of 30 more jobs at Novelis. Global growth in aluminium use has triggered industry re-structuring and investment, but can we make the UK an attractive place for such investment? We can be proud of recent investment, but this has been in the tens of millions, not the hundreds of millions invested elsewhere. ALFED has continually highlighted the issue of access to affordable energy, but this must be considered when making investment decisions.

Skills are also important to the aluminium sector. ALFED recently introduced young people to the industry at its successful auto conference, and has supported the DT Challenge. The sector as a whole supports apprenticeships, and recognises the need to encourage a skilled workforce.

Guest speaker was Professor Michael Stacey, from the University of Nottingham.

Michael opened by describing the position of aluminium as a material increasingly in demand, with proven sustainability credentials. It helps us achieve more with less, leaving a smaller environmental footprint. He suggested that this is the age of resourcefulness – not the age of austerity.

The UK has a long heritage of using aluminium in architecture, such as the 80 year-old windows in the Cambridge Library. We are an innovative nation – but can that be sustained? Michael feared that the UK could become like the US, where some architecture students resign from their first job because of the burden of debt. So the cost of study can affect the quality of the built environment. In the UK, the creative industries contribute almost as much to the economy as do financial services – but they employ twice as many.

Another issue is the need to change work visa regulations, to keep talented overseas engineers in Britain. More than 70% of university engineering students were from overseas, gaining British education and workplace experience, which is then lost to the UK.

Michael was pleased that manufacturing is back on the agenda, with investment in the sector up 11% in 2014. However, he felt that town planners' image of industry is too often rooted in the past: dark, polluting satanic mills. Planning still restricts manufacturing investment, and was the principal reason for Dyson creating 600 jobs in Malaysia rather than the UK.

Concluding, Michael proposed a new initiative to help tackle the UK's housing crisis – the Affordable Aluminium Home. 50,000 pre-fabricated homes were built in the wake of WW2, and similar imagination was needed today.

Prof. Michael Stacey's notes are attached

Discussion

David Mowat wondered what was behind the current popularity of aluminium. Michael suggested that in construction, durability was aluminium's strongest suit, while in the automotive sector legislation and the price of fuel was driving demand for lighter weight vehicles. Aluminium can even replace steel as a structural material.

Lord Boswell expressed surprise that in this country, skills and education are viewed as separate. Michael Stacey suggested that education should equip students with transferable skills, since the 'job for life' concept is now outdated.

Baroness Gardner suggested that planners should be more accommodating when considering alternative building materials such as aluminium, given their durability. Michael agreed, pointing out that such battles can be won – even in conservation areas.

Simon MacVicker agreed that legislation had driven efficiency in the automotive sector, and the same should happen in areas such as construction: we can't continue to design inefficient buildings.

Carl Tomlinson pointed out the need to look at the environmental aspects of products' use and end-of-life disposal or re-use – not simply first use. Michael agreed, giving the example of new, lighter Canadian trains, which obviated the need to reinforce existing bridges.

Paul Bowcher expressed concern at the high proportion of foreign engineering students, suggesting the term 'engineer' in the UK is used for technicians and mechanics, creating the wrong image. Michael agreed – engineering was seen as something that other peoples' children should be doing! It needs to have the status of other professions such as law.

Carl Tomlinson was concerned for the prospects of the 50% of children who don't go to university. There was general agreement that attention needs to be focused on the 14-18 age group, and JLR has said that many of its best engineers have first done apprenticeships, then degrees.

Kate Ravenscroft suggested that industry itself does not 'market' engineering careers well in this country. Also, few teachers have knowledge or experience of manufacturing, and all ALFED members were encouraged to invite local politicians to visit their operations. Will Savage reported that Aluminium Shapes in Corby had been delighted by the recent visit by Andy Sawford. Andy Sawford stressed that all manufacturing sectors need to ensure that young people understand what they do, and that they enable people to express their creativity.

At the end of the discussion Will Savage detailed the ALFED 'Political Calendar' for 2015, and outlined progress with the Industrial Strategy for Metals project being conducted by Metals Forum, of which ALFED is a member.



In the Upper Waiting Hall by the ALFED Exhibition

from left to right Will Savage (ALFED) : Andy Sawford MP (Corby): Carl Tomlinson (Tomburn): Steve McCabe MP (Birmingham, Selly Oak): Ernst Wagner (Kasto) : Professor Michael Stacey (University of Nottingham, Guest Speaker) : Simon MacVicker (ALFED President, Bridgnorth Aluminium): David Mowat MP (Warrington South): Baroness Garner: Colin Davies (Alcoa) : Paul Bowcher (Siemens): Lord Brookman: Laurie Palmer (Arun Technology)



Simon MacVicker, ALFED President with Professor Michael Stacey, Guest Speaker

Ian Oliver

11.12.14

This talk is entitled:

Tradition and Change: Skills, Education and Training in Britain Today

By **Professor Michael Stacey** for UK Aluminium Industry All-Party Parliamentary Group

at The Houses of Commons, London, 10 December 2014

Aluminium is becoming the first choice material in a wide range of sectors; be this trains, automobiles, reusable table formwork for casting concrete - to the roofs of award winning buildings of the 2012 London Olympics.

The common factor is achieving more with less using a responsibly sourced material that adds values and achieves a lower carbon footprint. This needs to be the age of resourcefulness not austerity.

As a nation we need people with education, skills and appropriate training to work with aluminium; to smelt it, recycle it, extrude, roll, design, engineer, detail, and to fabricate, finish and install: be this the Olympic Velodrome by Hopkins Architects, Dyson's Headquarters by Wilkinson Eyre or 5 out of the 6 shortlisted projects in this years Stirling Prize, which is one of the worlds top architecture prizes.ⁱⁱ The winner - The Everyman Theatre, Liverpool, by Howarth Tompkins, has a façade comprising 105 water jet cut anodised aluminium sunscreens: with the profiles of people from Liverpool, Scousers, Everymen and Everywomen.

Contemporary construction and contemporary manufacturing are based on the collaboration of teams of people often with diverse skills and knowledge bases who are willing to pool their intellectual and physical resources to achieve excellence.

In Great Britain we have a long heritage of building assembled using aluminium.

I am certain that you all know that the Sculpture of Eros, cast in aluminium, dates from 1892. The oldest extant example of aluminium in architecture is the ceiling of the Family Chapel of St Edmonds Church, Fenny Bentley, Derbyshire, which is 120 years old next month.ⁱⁱⁱ

The oldest anodised aluminium windows in service were specified by Giles Gilbert Scott for Cambridge Library in 1934. The windows are 80 years old and still working well. They were manufactured in Wolverhampton. It may also surprise you to learn that Henry Ford's Factories in America were clad in windows made in Britain.^{iv}

Great Britain is 'a tremendously inventive nation'^v In terms of number Nobel Prize winners Great Britain is only second to USA and when ranked in terms of population we are two places above our American cousins. In terms of major inventions Great Britain is only just second to China.^{vi} The Global Innovation Index place Great Britain second in the world behind Switzerland.^{vii} The challenge is how this inventiveness is supported and sustained this century.

One of the wellsprings of this inventiveness in Britain is the culture of this country which “values liberty, scientific freedom and mutual forbearance”^{viii} combined with quality of our education and in particular our world class universities. 4 of the world's top 10 universities are in Britain and all 4 are in England.^{ix}

However I am deeply concerned by the effects of high fees, for example, fees of £9000 per year in England to study Architecture, which is a five-year course.

Professor Robert Mull has described this as the effective privatisation of High Education in England, suggesting that ‘students of diverse backgrounds will be priced out of architecture due to concerns over future debt’.^x The Higher Education Commission Report (2014) suggests that the current method of funding Universities in England via student debt will prove unworkable and is about to reach a tipping point in terms of financial viability.

The indebtedness of graduates in England will be comparable to graduates of American Universities. An American architect who has designed a major project in London, which is currently under construction advised me that some of his graduate architects resign from his firm that pay reasonable rates, because of their indebtedness and they then would for commercial practices who turn out ‘ordinary’ architecture. Thus cost of studying can fundamentally affect the quality of the Built Environment and life in our towns and cities.

In essence Lord Brown's review, which led to the current approach funding English Universities over looked the importance of Creative Industries to the British economy.

“Financial Services contribute to GDP only about 1% more than the Creative Industries [in the UK economy], which employs 2 million people and Financial Services only 1 million people, yet [Creative Industries] receives but few column inches”^{xi} observes Christopher Frayling.

I am certain that you are well aware of design excellence of Paul Smith from Nottingham and his Raleigh bicycle to riches story. Two younger world-class designers based in Nottingham are Textile Designer: Hannah Waldron and Ceramicist: Carly Dodsley. The latter has all her designs manufactured in Stoke on Trent.

As does Emma Bridgewater who actively wanted to become part of the manufacturing tradition of that town and stating recently on Radio 4 “I hate the notion of manufacturing abroad”.^{xii} Why are we interested in the creative people, not that they might write your Made in Britain Christmas present list, but because they generate the need for our industries to fabricate and build factories, offices and shops, which are often rich in aluminium components.

In Britain I believe there has been a false educational dichotomy between academic subjects and physical, craft or vocational subjects. Juhani Pallasmaa^{xiii} writes about the ‘Thinking Hand’. In countries such as Japan craft is very much part of the intellectual culture of that nation.

Personally after studying two degrees in architecture I chose to work in Industry when this was deeply unfashionable, to place this in time Margaret Thatcher was Prime Minister, at the beginning of her second term in office. In a cladding manufacturer on Merseyside I found that I could get a new aluminium extrusion cut with the trial material on my desk in three weeks.

The factory floor was run by a wonderful and experienced man George Beardsworth, with whom I had to undertake a metal work apprenticeship. There had not been an apprentice in the factory for over 10 years. In essence he, would not make my designs unless I fully understood how all of the machines worked. This led to orders for millions of pounds of cladding, working with leading British Architects including BDP and Arup Associates.

This experience combined with my studies at the University of Liverpool enabled me to invent the Aspect 2 Composite Cladding System, subject of a world patent and manufactured, using aluminium, in Britain. This system remained ahead of the Building Regulations for over 10 years. It was used to clad major buildings in London, Sheffield and Newcastle, where you can see it still on St James' Park the home of Newcastle United.

Therefore I welcome the renaissance in apprenticeships. In 2012 there were over 500,000 new apprentices in Britain, of whom 90% are retained in employment. ^{xiv} Since 2006 Higher Education Graduates can progress onto an apprenticeship. Alternatively Higher Apprentices generate a skilled workforce industry with an educational equivalent up to that of a master degree.

James Dyson through his foundation actively works to encourage children to take an interest in science and engineering. I would like to widen his scope to include architecture along side engineering. That is why I am delighted to serve as a judge on the Alu DT Challenge, alongside Mark White of Jaguar Land Rover. This competition encourages 12-14 years to design with aluminium; in 2014 I was delighted to see a team of boys from a Scottish Comprehensive win a prize in the Garden Architecture section. Well-funded Private Schools have tended to dominate this competition and thus I welcome Labour proposed policy of encouraging collaboration between Private and State Schools.

The new skills of the digital world have crossed from the virtual to the physical resulting in a renewed interest in workshops and making. These techniques have moved swiftly from the realm of model making, through rapid prototyping to the digital printing of fully functional components. It is now possible to digitally print metal components, including aluminium. This has been described as the Second Industrial Revolution. These techniques are already being used in aerospace and architecture.

A very recent development is the carbon fibre reinforced aluminium, which looks very promising but remains at present experimental. Although aluminium now has a long heritage within material culture – it continues to be informed by humankind's inventiveness.

Investment in R&D is critical. I believe that there are opportunities for Universities to become the R&D Departments of SMEs. Working closely together progressing beyond the relationships created by Knowledge Transfer Partnerships, for example, and I believe this should be conceived more as a two-way relationship between Industry and Universities.

The importance of investment in design thus adding value, which includes R&D is demonstrable via Jaguar Land Rover and Dyson. Jaguar Land Rover spent over £900 million annually on R&D in 2012.^{xv} Primarily in the development of all aluminium cars, this included the Ranger Rover 2013, which saved 420kg in weight compared with the previous model resulting in a 20% improvement in fuel efficiency thus significantly reducing these vehicles CO₂ emissions. This commitment to design excellence has seen Jaguar Land Rover's turnover increase in 2014 to nearly £20,000 million, with a profit of over £2,500 million.^{xvi} Employment at Jaguar Land Rover has increased by over 10,000 people in the 4 years to 2014.^{xvii}

Training and education is critical to widening employment for UK citizens and to be able to produce added value products of all types. There is however a need to reform the current visa regulations. James Dyson invests £50 Million investment in R&D at British Universities. He is concerned by the current visa regulations "One important thing we should do is to keep those engineers in Britain. A lot of them come from overseas, in fact, 90% of researchers at British universities come from overseas, and we must encourage them to stay here." Over 70% of my PhD students and graduates are from overseas.

At the Architectural Association, where the fees are high, until recently overseas students studied for 2 years and then typically undertook two years of work experience with major architecture and engineering practices.

London is a world node for excellence in Architecture and Engineering. These students contributed to the UK economy via fees and expenses and then earning domestic and invisible earnings with major practices. These students were seldom or never a drain on the resources for our nation. For the want of a headline in Red Top Newspapers, people who add value to the UK economy and then typically return to the home countries with state of the art knowledge and work experience are now lost to our economy.

Within architecture such students now cannot complete their RIBA Part 3, as this needs a year in practice. Current visa regulations may result in a loss of overseas students in our major universities. The voices calling for the reform of visa regulations include the Mayor of London Boris Johnson. Even a reform that incorporated a set period of work experience, say two years, would represent progress.

Manufacturing is firmly back on the agenda of the nation and a rare example of cross party consensus. It is good to learn that this is more than rhetoric. George

Osborne announced in the Autumn Statement (2014) “that Manufacturing is growing faster than any other sector; and investment is set to be up 11% this year – growing faster in the UK than any other major advanced economy.”^{xviii} I believe, however, much more could be undertaken to encourage a renaissance of making and manufacturing. To my knowledge there is not an example of industrial led regeneration in Britain, today. I am concern that our Town Planners still have an image of industry based on John Ruskin, William Morris or even LS Lowry – that industry equates to dark polluting satanic mills. Nothing could be further from the reality of contemporary manufacturing. James Dyson moved manufacturing to Malaysia, with the loss of about 600 jobs, because he could not get planning permission of an extension of his factory.

The Malmesbury Research and Development campus currently employs a 1000 engineer and the investment of £250million, announced in 2014, will produce another 3000 jobs.

With careful design Manufacturing can be placed in rural areas to achieve a good quality of life. An example of this is the Sophos Headquarters, Abingdon Oxfordshire, designed by Bennetts Associates. This aluminium based project takes inspiration from St Catherine's College Oxford, where its founders studied. It is located in the Oxfordshire countryside to attract and retain a highly skilled work force. Examining the employment statistics for rural Britain; manufacturing is the second highest employer in rural Britain behind tourism but ahead of agriculture.

The lack of affordable homes in Britain today, is starting to resemble the housing crisis in this country after World War Two. The Aluminium Industry's response back in 1944 was the AIROH Aluminium Prefabricated home.^{xix} Over 50,000 of these were produced. They were very successful and much loved. These homes had a life expectancy of at least 60 years and there is a group of 30 still occupied in Redditch. Therefore I propose a new initiative - the Affordable Aluminium House, and that this initiative should embrace Education, Skills and Training, whilst producing affordable and liveable homes to house the next generation.

Thank you.

Professor Michael Stacey, Chair in Architecture, The University of Nottingham School of Architecture and Built Environment Group and Director of Michael Stacey Architects: Michael.stacey@nottingham.ac.uk and Michaelstaceys4aa@icloud.com, additional research by Michael Ramwell of Michael Stacey Architects.

ⁱ Margaret Stacey, *Tradition and Change: a study of Banbury*, Oxford University Press, 1960

ⁱⁱ <http://www.architecture.com/StirlingPrize/RIBASTirlingPrize.aspx>

ⁱⁱⁱ Michael Stacey ed., *Aluminium and Durability: Towards Sustainable Cities*, Cwningen Press, 2014

^{iv} *ibid*

^v James Dyson *Daily Telegraph*, 13 Oct 2009

^{vi} Carl WWilkinson, Ed., *The Observe Book of Invention*, 2008, data from 2007. Major Inventions: China 19 - Great Britain 18

^{vii} <https://www.globalinnovationindex.org/content.aspx?page=GII-Home> The Global Innovation Index is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO, an agency of the United Nations, UN)

- ^{viii} Bertrand Russell, *Philosophy and Politics*, Cambridge University Press, 1947, p.27
- ^{ix} Based on QS Top Universities <http://www.topuniversities.com>
- ^x *Architects Journal* accessed online 26.11.04
- ^{xi} Christopher Frayling, former Chairman of the UK Arts Council, *Start the Week*, Radio 4, Monday 19 November 2012, transcribed by Michael Stacey from audio file
- ^{xii} Radio 4, 3 December 2014, recorded by Michael Stacey
- ^{xiii} Juhani Pallasmaa, *The Thinking Hand*, Wiley, 2009
- ^{xiv} Apprenticeship Statistics, February 2014. Obtained 04/12/2014. www.parliament.uk/briefing-papers/SN06113.pdf
- ^{xv} Figures to the March year end in 2012 Jaguar Land Rover Directors' Report and Financial Statements, Year Ended 31 March 2012, Jaguar Land Rover PLC, p. 66
- ^{xvi} Figures to Year End March 2014. Jaguar Land Rover annual report 2013-2014 PDF, obtained 04/12/2014
- ^{xvii} *ibid*
- ^{xviii} <https://www.gov.uk/government/speeches/chancellor-george-osbornes-autumn-statement-2014-speech>
- ^{xix} The Aluminium Industry was responding to this need focused by a Government Competition, see Michael Stacey ed., *Aluminium and Durability: Towards Sustainable Cities*, Cwningen Press, 2014, pp. 44-45