

**SPEECH TO THE FOUNDATION FOR SCIENCE AND TECHNOLOGY DEBATE ON 24<sup>th</sup> SEPTEMBER, 2013**

*[The slides follow the text of the speech – scroll down or print]*

My Lords, Ladies and Gentlemen,

Whenever I'm asked to speak, I always use some elements of Kipling's six honest serving men.

The first one today is WHY are we here?

That is, why are the institutions here and why are we here this evening?

I find the answer is usually in George Stephenson's founding statement of the Institution of Mechanical Engineers:

*"To enable Mechanics and Engineers engaged in the different Manufactories, Railways and other Establishments in the Kingdom, to meet and correspond, and by a mutual interchange of ideas respecting improvements in the various branches of Mechanical Science to increase their knowledge, and give an impulse to inventions likely to be useful to the world."*

**SLIDE 1 Stephenson's words (above).**

This might sound philanthropic, but my guess would be that Stephenson and his cronies also had in mind how they would grow markets and share some of the rich proceeds of that growth – coal, railways, industry.

I have read Stephenson's presidential address to the IMechE, and it is also clear that he recognised the threat of foreign competitors stealing a march on the UK's innovation:

To quote: 27 January 1847

"Unless the talent of England was concentrated it was not unlikely some of the continental talented men might take part of the business of the Country....."

And this worked. UK influence and innovation spread around the world, helped by this society of like-minded engineers – meeting, exchanging ideas and setting up new businesses.

But at some time from the late 19<sup>th</sup> century to the late 20<sup>th</sup> century, we changed, I contend. We became a bit too learned society, a bit too academic, perhaps a bit too "old boys club."

I saw this, was worried by it, and stood for our governing body, the Council at the time. Some 21 years ago.

Since then, I am pleased to say that with the drive from our members, Trustees and staff, I want to put the case to you that we have changed dramatically and that we are demonstrably "improving the world through engineering".

## **SLIDE 2 "Improving the world through engineering"**

It is no coincidence that that is our vision statement and we exercise it in several ways.

Let me share parts of our strategy and business planning:

We have six Strategic Objectives (one is finance so I won't share that with you here.)

### 1 Growing the professional membership

The acid test of any organisation and its ability to influence change is surely whether it can grow itself. We talk about Apple or Samsung or Toyota or indeed Rolls-Royce because they are large and growing. When companies are in decline we look to them less for leadership.

In the Mechanical Engineers, we are therefore focused on contacting all the people capable and relevant to join our membership and looking to see how we can further develop their professional skills.

This is not just in the UK, but global, to match our professional reach and our overseas markets – we have more than 20,000 international members.

Let's be clear; we are selling professionalism, innovation and competence based on a continuously developing international benchmark standard - and this is what our UK and international customers want!

The key point is that we are driven by the skills industry needs. We form a bridge between education and work. Developing engineers – IPD and CPD - to provide the skills industry needs.

- We run Formula Student – where we have high-performing teams of innovative graduates with complementary "soft" skills
- We are working with IET and ICE to register and promote Engineering Technicians

### 2 Increasing engagement with members and their employers

Like all of the Institutions here tonight, we have many more members than we have staff. In our case, the ratio is 1,000 to 1. Our ability to operate as an organisation is therefore driven by the need to engage these members into sharing their knowledge and views to create a "Learned Society" programme.

- We provide networking and events for innovative ideas and knowledge transfer – from the motor industry to aerospace, from nanotechnology to nuclear.
- We export and showcase our best capabilities, by e.g. international

conferences that can lead to new international business for our member companies (e.g. Indian Rail)

- We also operate some of our own commercial subsidiaries which allow us to make a direct injection into high skill level SMEs – SIA, ARL, Sonaspection
- We can provide some of the six key factors (other than finance) that boost small businesses into the next part of the growth curve:

### **SLIDE 3 Six key factors to develop SMEs**

1. Developing technically qualified people with project management skills
2. Training and technical development programmes for all their people, including management
3. Recognising and proactively engaging in identifying opportunities
4. Awareness and use of industry and technology developments
5. Vision
6. Knowledge of new processes and manufacturing methods

Without these, they don't break out of the small company stage - and it is what we do!

#### 3 We provide thought leadership

Our raison d'être is to provide an impulse to invention and to develop Mechanical Science as I have said. In doing that, we are independent of single company or even sector bias. We are unashamedly pro-engineering, but are equally happy constructively criticising our members actions as we are in defending them. Our code of conduct as registered engineers underpins all we do.

- We generate Position Statements - Energy Storage, Shale Gas, Fuels for Transport

### **SLIDE 4 Slide of theme reports**

- We are aligned with industry and government is aligned with us – we all want a more skilled workforce
- We are not afraid to be controversial – more reports can be hard-hitting

#### 4 Increasing public engagement

True change comes however when the 93% of the UK population who are non-engineers and non-specialists start to take an interest in what we say. The key is to talk about what interests them and not just tell them what interests us.

- We can often provide the interface between academia and business as we have done for 30 years with our Manufacturing Excellence Awards, working with Warwick Manufacturing Group and now

## **IMechE President**

### **Speech at The Foundation for Science and Technology Debate on the contribution of the engineering institutions to economic growth held on 24<sup>th</sup> September, 2013**

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Cambridge Institute for Manufacturing.

- Prizes and awards – investing in and showcasing the best talent – the Queen Elizabeth prize was an IMechE initiative
- Reports – *Annual Manufacturing survey*, Global Food, Waste Not Want Not, Geo-Engineering, When STEM?, Olympics – The Engineer Always Wins

## **SLIDE 5 Policy statements**

### 5 Inspiring young people into engineering

How do we know we are having an effect? Well, firstly, the number of 11 to 16 year olds who describe an Engineering career as “interesting” has risen remarkably from 29% in 2011 to 43% this year according to Engineering UK. The number of students actually taking GCSE Physics has increased spectacularly from 47,953 in 2003 to 157,377 this year. Those taking A Level Physics have also increased 12.8% over the same period, whilst those taking Engineering at University has gone up by 48%. I’m particularly pleased to be able to report that for Mechanical Engineering, the University increase is 71.2% over that period with over 6,600 students choosing those courses from the latest data we have. Importantly for the UK, 78% of those students are still UK nationals. Indeed that figure of national origin for Mechanical Engineering has not changed at all in the last ten years with 78% of entrants to higher education also being UK nationals back in 2003.

My colleagues might mention the 60,000 students that come to the Big Bang Fair each year to see companies and others showcase their operations. I am equally proud of the number, maybe twice that, that get exposed to engineering in just as exciting a way at their local school or college. It is by working with them, and at the moment on topics like the parlous state of careers advice in this country, that we have our biggest impact.

- We are encouraging the next generation – Primary engineer etc
- My own initiative - Proud to be an engineer

#### And our next focus is: –

Working together on the challenge of doubling the pipeline at all levels of students studying engineering in the UK.

One of our latest initiatives at the Mechanical Engineers is to create an Academic panel consisting mostly of non-members. Through this, we will bring together key active people from the academic world – from the well-known and less well-known universities. We will use this as a forum to understand their direction and constraints and provide input from member groups.

This matches our industry panel, and we will link them together to get the very best alignment of interests.

## **SLIDE 6 Logos of companies on our Industry Panel**

So 3 points to take away:

- 1) We are professionalising those who work in UK industry (and international links) – but we need to do more with SMEs - we want them to be the MNCs of the future
- 2) We are exchanging ideas and knowledge – and giving international UK a boost – by engaging engineers and non-engineers alike
- 3) We are inspiring young people to fill the engineering roles of the future and part of this is to name exciting role models from the 21<sup>st</sup> century. Here are some:

**SLIDE 7 A picture of SI, JKI, EM and AN**

Or in Stephenson's words:

We are doing just what I said at the beginning: (show slide)

*"To enable Mechanics and Engineers engaged in the different Manufactories, Railways and other Establishments in the Kingdom, to meet and correspond, and by a mutual interchange of ideas respecting improvements in the various branches of Mechanical Science to increase their knowledge, and give an impulse to inventions likely to be useful to the world."*

**SLIDE 8 Stephenson's words with IMPULSE highlighted**

But let's make sure we all give a common, powerful, exciting message:-

It is our duty to give that impulse!

# FOUNDATION DEBATE.

Institution of  
**MECHANICAL  
ENGINEERS**

Patrick Kniveton FIMechE  
President, Institution of Mechanical Engineers

24 September 2013

[www.imeche.org](http://www.imeche.org)

**Improving the world through engineering**

## **GEORGE STEPHENSON PRESIDENT 1847-1848.**

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# **“IMPROVING THE WORLD THROUGH ENGINEERING”**



## **SIX KEY FACTORS TO DEVELOP SMEs**

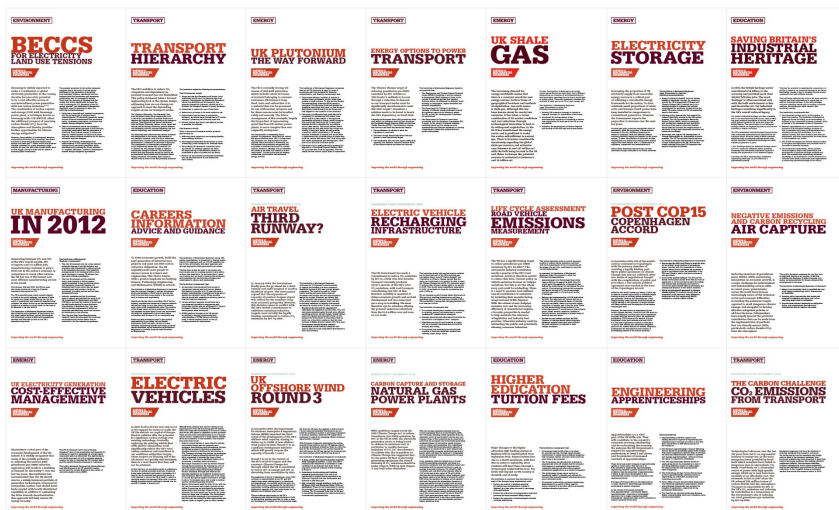
1. Developing technically qualified people with project management skills
2. Training and technical development programmes for all their people, including management
3. Recognising and proactively engaging in identifying opportunities
4. Awareness and use of industry and technology developments
5. Vision
6. Knowledge of new processes and manufacturing methods



## KEY INSTITUTION THEME REPORTS.



## INSTITUTION POLICY STATEMENTS.





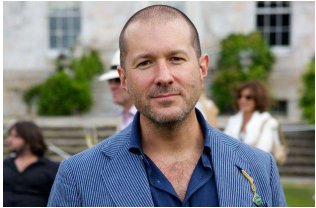
**INDUSTRY PANEL  
REPRESENTATIVES.**



**21<sup>ST</sup> CENTURY  
ENGINEERING INSPIRATIONS.**



**Steve Isakowitz**



**Sir Jonathan Ive**



**Adrian Newey OBE**



**Elon Musk**

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