

All-Party Parliamentary Group on Science & Technology in Agriculture

**Notes of a meeting held on Tuesday 31 January 2017
Committee Room 20, Palace of Westminster**

The Science Museum: plans for a new agriculture exhibit

Present:

Members

Julian Sturdy MP (Chair)
Earl of Selborne
Duke of Montrose

Guest Speakers

Ian Blatchford, The Science Museum
Alex Tyrell, The Science Museum
Mary Cavanagh, The Science Museum

Stakeholders

Roger Carline, NIAB; Steve Tones, AHDB; Sez Maxted, Farmer; Elizabeth Hill, Dow AgroSciences; Prof Nicola Spence, Defra; Jaine Chisholm Caunt, GAFTA; Anna Herridge, GAFTA; Abigail Young, GAFTA; Joe Brennan, nabim; Fraser McAuley, CLA; Prof Peter Mills, Harper Adams University; Andrea Graham, NFU; Neil Hipps, University of Kent; Prof Chris Atkinson, University of Greenwich; Alice Turnbull, Bayer; Emily Norton, Farmer; Amy Trenter, abc; Lindsay Ford, Royal Horticultural Society; Dr Alistair Griffiths, Royal Horticultural Society; Andrew Spence, Defra; Charlotte Carroll, University of Cambridge; Mariana Fazenda, University of Cambridge; Prof Graham Jellis, AFCP; Paul Rooke, AIC; Prof Keith Goulding, Rothamsted Research; Stephanie Mathisen, Sense About Science; Sean Ryan, Defra; Rachel Lampert, DfID; Daniel Pearsall, Group Co-ordinator

1. Welcome & Introduction

Julian Sturdy (JS) welcomed Members and stakeholders to the meeting and briefly introduced the topic for debate, observing that from his own experience as a child visiting the Science Museum and more recently taking his own children, it was clear that the agriculture exhibit needed to 'catch up' with other areas in terms of providing a cutting-edge experience and showcasing the innovative science involved in farming today.

Noting that farming was often presented in traditional or old-fashioned terms, JS highlighted the need to do more to celebrate the fact that modern agriculture is a hi-tech enterprise, and that food production is as much an achievement of scientific research and innovation as the latest advances in other industrial sectors.

JS emphasised in particular the importance of exploring new ways to build better public engagement, understanding and acceptance of the use of technology and innovation in farming and food production, noting that with 3.4 million visitors per year, including more school children than any other UK museum, the Science Museum was uniquely placed to explain, demonstrate and connect farm-level innovation with the consuming public.

2. Guest speakers

[Please note that a short summary of the Science Museum's proposed exhibit is also available to download via the meetings section of the All-Party Group web-site at www.appg-agscience.org.uk]

Ian Blatchford, Director, The Science Museum

Ian Blatchford (IB) explained that plans to update the Science Museum's agriculture gallery stemmed from initial discussions with Defra, the Met Office and industry representatives around the time of the launch of the Government's Agri-Tech Strategy, and were based on a general recognition that the Museum's portrayal of scientific advances in agriculture lagged behind other areas and was in fact a 'national disgrace'.

IB highlighted the depth of audience research going in to the development of the new agriculture gallery, noting that the Science Museum was passionate about sustainability and this was probably one of the most fascinating areas – given the global challenges and scientific opportunities involved – to be addressed by the Museum in that context.

IB indicated that audience research suggested that the public deeply relished the prospect of a new agriculture gallery, and that there was genuine confusion on the issues at stake, including the unexpected additional debate surrounding Brexit and its implications for the future of British agriculture.

He suggested that the Science Museum was uniquely placed and experienced in bringing the vast array of information on this issue together to provide a balanced and captivating narrative to catch the attention and imagination of the public.

IB reported that the Museum's existing agriculture display had now been closed, and that a prominent gallery at the front of the Museum on the first floor, alongside the biggest medical history gallery in the world - scheduled to open in 2019 - had been reserved for the new agriculture exhibit. This reflected not only the relationship between food and health, but would also provide the opportunity to challenge visitors' pre-conceptions that agricultural technology was just about heavy engineering and machinery.

He emphasised the relationship of trust the Science Museum enjoyed with its audience, close enough to Government to be regarded as an institution yet far enough away to be seen as independent. In addition to its physical presence, IB noted that the Museum had a vast online audience and digital presence with 10 million visitors to the website each year, and these new media would also feature strongly in plans for the new agriculture gallery.

Alex Tyrell, Head of Exhibitions, The Science Museum

Providing an overview of the new contemporary agriculture gallery, Alex Tyrell (AT) indicated that it would set out to tell the compelling story of how science and technology are helping to balance the need to provide enough food for a burgeoning population with growing concern for the planet's limited resources and a changing climate. AT reported that the gallery was due to open in June 2018.

AT explained that the Science Museum aimed to make sense of the science and technology that shape our everyday lives, to help create a scientifically literate society and to inspire the next generation of scientists.

Before creating a new gallery, AP explained that a lot of preparatory work went into understanding the topic from the audience's perspective. Of the Science Museum's 3.4 million visitors per year, around half were families. Background research in the run up to the contemporary agriculture gallery had shown very quickly that for most people the way in was food

as a deeply personal and value-laden issue with strong connections to health, the family and wider society. But the research also identified a disconnect between the food we eat and our understanding of how it was produced, with farming viewed as remote from the metropolitan world and also raising issues of trust in modern, science-based agriculture.

AT suggested that the Science Museum was a trusted voice in this arena and would aim to present an optimistic story of how science and technology can help address the challenges facing our food supply.

AT noted that the old agriculture gallery, originally opened in 1966 and featuring a series of highly detailed dioramas, had been incredibly popular in its time but clearly the issues and debate had now moved on. Visitors to the Museum today expected to be challenged, to share their opinions, and to interact with exhibits. The new gallery would seek to re-frame agriculture as a vital and dynamic industry, with food as the common ground.

AT added that the area on the first floor reserved for the agriculture gallery occupied a prime location in the Museum with high footfall – a large 500m² site targeting schools and families in particular but giving all visitors the space and freedom to explore this fascinating issue.

Mary Cavanagh, Content Developer, The Science Museum

In presenting the role of agricultural innovation in producing enough food while preserving the planet's precious resources, Mary Cavanagh (MC) said the Science Museum's new contemporary agriculture gallery would amaze visitors with the level of science and technology in farming, but would also seek to expose them to some of the dilemmas facing farmers.

Ultimately the exhibit would aim to re-connect people with modern agriculture and promote a deeper understanding of where their food comes from, and to demonstrate how scientists and engineers are working to help farmers produce enough food and protect the environment in a changing world and a changing climate.

MC observed that while the new gallery's primary focus would be on contemporary agriculture, it would include some historical objects – eg a vial of ammonia from a demonstration of the first Haber process in 1909 and the original black Ferguson tractor prototype from the 1930s – to provide context and demonstrate how modern farming has progressed from historical origins.

MC explained that preparations for the new gallery over the past 18 months had involved a number of visits to research institutes, universities, conferences and events, and the planning process was also guided by an external advisory panel involving experts from across the farming industry to ensure the gallery was on firm scientific ground and balanced in its presentation.

In terms of content, MC indicated that the gallery would be split into four main sections, all related to the top-line message about balancing the need to produce enough food while addressing social and environmental challenges and concerns.

The first section would focus on soil – how farmers work with soil, its diversity and fragility and the importance of our increasing understanding of soil science to maintain food production. This section would include a large modern tractor to demonstrate the power and sophistication of modern machinery used to work soil, alongside a demonstration of the biodiversity held within soils, the structure of soils and its nutritional content. It would also discuss the different ways science and technology are being used to help farmers work more efficiently and sustainably with soil, such as precision farming, controlled traffic farming, use of robotics and artificial intelligence, direct drilling and use of drones.

The next section would concentrate on crop protection – highlighting the role of science and technology in protecting crops from pests, weeds and diseases while at the same time working with natural systems to help produce enough food and leave space for wildlife.

Historically this would include discussion of the early development of synthetic pesticides and the rise of the ecological movement typified by Rachel Carson's 'Silent Spring', as well as consideration of alternative approaches such as GM corn borer resistance and laser weeding, as well as a focus on pollination featuring a robotic bee acquired from Harvard University.

The third section would focus on rearing animals and livestock, and how science and technology are being used to address concerns over animal health and welfare – including a focus on automated dairies linked to rumen sensors and 'fitbits' to provide bespoke diets for individual cows and provide early warning of any health issues, the application of science to improve understanding of animal behaviour and design production systems to improve health and reduce stress, and the development of GM chickens which do not transmit bird flu.

MC added that this section could also include a presentation of scientific solutions which remove the need for animals altogether, such as the use of GM yeast by US scientists to produce cows' milk, as well as a discussion of how science and technology can be used to address concerns over antibiotic use and resistance build-up in livestock production systems.

The final section would demonstrate how science and technology are being used to help farmers adapt to climate change, particularly in terms of efficient use of water and other natural resources. This could include discussion of hydroponics, wet/dry rice growing techniques developed by IRRRI, use of DNA sequencing to breed climate resilience traits such as drought tolerance, as well as the increasing use of big data to provide more accurate forecasts of weather and growing conditions and make better projections of crop yields and performance.

In terms of visitor experience, MC explained that the intention was to provide people with a first person encounter with contemporary agriculture, something they would not otherwise experience. This experience would include unique objects, films and images, digital and interactive displays, pieces of art and space to reflect as well as an accompanying programme of events, debates and online content.

AT added that as the process of collecting objects and material progressed the Museum was also mounting a fundraising campaign to finance the new contemporary agriculture gallery – with a target of £3m to create a landmark gallery to last for at least seven years and allowing for updated material to be added over that period. The Science Museum would be working closely with BBSRC and through its established network of charitable trusts, foundations and corporate sponsors as part of this fundraising effort.

MC explained that research was continuing in key content areas and suggestions of additional case studies or issues not covered so far were very much welcomed. Designers for the new gallery would be appointed over the coming months and provided fundraising targets were met the anticipated opening would be in the summer of 2018, coincidentally also planned as the Year of the Engineer and an important opportunity to demonstrate that UK engineering expertise extends beyond the aeronautics and automotive sectors.

Questions and discussion

The following key points were highlighted during discussion:

The timeliness of the new gallery in view of the discussions taking place over post-Brexit agricultural policy and the global role of UK science and innovation.

The opportunities, given its positioning next to the new health gallery, to feed in to human health topics such as antibiotic resistance.

In relation to the planned soils section, the importance of referencing the unique heritage and leadership of UK agricultural research, including the long-running Broadbalk winter wheat experiment at Rothamsted, begun in 1843.

The opportunity within the new gallery to discuss and address social concerns associated with farming and the provenance of our food, including issues such as animal welfare, food waste, food miles and labour.

The importance of celebrating and highlighting UK leadership in agri-science but also including an international dimension to the gallery – at least 20% of case studies featured in the gallery will be from overseas.

Alongside farming's relationship with biodiversity and wildlife, the opportunity to discuss agriculture's impact on habitats and the farmed landscape, eg through policy changes on hedgerows, the debate over land-sparing vs land-sharing.

In presenting agriculture through the prism of food and health, the opportunity to explore the importance of our relationship with food, and to highlight the potential to improve diets and nutrition through scientific innovation - eg selective breeding and GM.

In a global context, the scope to underline the strong correlation between the themes and sections highlighted in the Science Museum's plans – food security, environmental protection, soils, climate change, animal welfare – and the United Nations' Sustainable Development Goals.

The importance of enabling visitors to understand the dilemmas and challenges facing modern agriculture today – and providing the basic information for people to make their own decisions without pursuing an overtly campaigning or propagandist agenda.

In the longer term, the Science Museum's ambitions to take the exhibit beyond London and even internationally – discussions taking place on this issue.

The scope to reference other sections of the museum within the agriculture gallery to reflect the fact that much of the science and innovation taking place in farming is in common with other sectors – eg big data, robotics, precision engineering etc.

The importance of demonstrating that scientific innovation is not exclusive to large-scale agriculture, particularly since 75% of the world's food is grown on small farms.

The need for careful presentation of emotive issues such as GM, particularly in view of the ongoing discussions taking place over the regulatory status of new gene editing techniques, and the post-Brexit opportunities for the UK in this area.

Concluding the meeting, Julian Sturdy MP thanked speakers and attendees for their contribution to a stimulating and informative session, and indicated that the All-Party Group would continue to follow the new gallery's progress with keen interest.