

## **Science Parks in the United Kingdom Today and Tomorrow**

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My presentation to APTE today is in part factual and in part a personal reflection of what is happening in UK Science Park's. It will be factual looking back in time and factual on the statistics of where we are today. I will give you my opinions on the strengths and weaknesses of our Science Park movement as we are today – but finally I would like to reflect on where I believe we should be heading.

### **A Brief History**

In the UK the Science Park movement started in the early 1970s with the creation of Herriot Watt and Cambridge Science Parks that were both cast in the style of typical US Parks of that era. Both moved forward very slowly producing little impact on their local economies and largely going unnoticed until the mid 1980s.

In 1980 Margaret Thatcher, newly elected as Prime Minister, challenged the Universities to make themselves more relevant to the needs of Industry, making it clear that those that did so could expect to receive additional funding. This produced the motivation that drove the second wave of UK Science Parks. The Universities of Aston, Birmingham, Manchester and Warwick amongst others quickly established projects in the early to mid 1980s. The Government encouraged the English, Scottish and Welsh property development agencies to work with Universities to bring forward more projects and this accelerated the pace of development throughout the latter 1980s. These effects can be seen in the statistics from UKSPA for the numbers of Parks in operation and the amount of floorspace and numbers of jobs created on the of Parks.

Then throughout most of the 1990s the movement tended to stagnate at a level where about 50% of UK Universities had an associated Science Park. There has been another spurt of growth in the last few years driven by a number of factors, including:

- The conversion of Polytechnics to Universities in 1992, some of which have marshalled resources to become involved in Science Parks as the decade progressed.
- The strong growth of the IT industry throughout the mid and latter part of the 1990s making it easier to attract property investment for IT oriented Science Park developments.
- The movement of former Government Research laboratories towards or into the private sector.

Examples of more recent projects include Culham Science Centre (Oxford) based on the Euratom / UKAEA Fusion laboratories, Hillington Park (Glasgow) involving Caledonian Properties, University of Paisley, Scottish Enterprise and others and the Farnborough Innovation Centre (Surrey) based on the defence laboratories of DERA.

From the early 1990s onwards we can say that Science Parks were a recognisable feature of the University and the Economic Development landscapes of the UK with

most technology based businesses understanding what a Science Park was. Furthermore, there is strong evidence to suggest that outside the pre-existing high technology “hot-spots” of the UK such as Cambridge, London and the M4 Corridor, Science Parks were coming to be a focus for the most R&D intensive and innovative technology based companies in their regions.

#### **UK Parks – a statistical profile**

So what do the UK Science Parks look like in aggregate today? Not surprisingly the statistics collected by UKSPA show that very little has changed over the last 15 years apart from the fact that the movement has grown larger! They show that:

- About 75% of the companies on the Park come from within 50km and about 20% from the University.
- 65% of the businesses are independent
- 40% employ less than 5 staff and 75% less than 15 staff, so Parks are dominated by SMEs (small and medium sized enterprises)
- IT / Telecomms companies remain the dominant sector using Science Parks
- In terms of activities - R&D, product design, sales & marketing and consultancy continue to be the most significant.

Thus, in aggregate UK Parks are the choice of local entrepreneurs engaged in developing knowledge based SMEs in the faster moving technology sectors. Research studies carried out in the 1980s and 1990s on the profiles of Science Park companies show the independent businesses to be dynamic in growth terms, R&D oriented and owned and managed by highly qualified and well-educated individuals.

#### **A closer look**

Another way to look at Science Parks is to understand the role they are playing in the development of their local economy or in the improved flow of innovation from the University sector.

I believe I can discern a number of trends, not all of which suggest that UK Science Park's are going to fulfil their potential. The key trends appear to be:

- Parks that have emerged as leading providers of technology business incubation processes. In these cases the incubator buildings owned and managed by the Park are only a part. Examples include Oxford Innovation 10 incubators), St John's Innovation Centre (Cambridge) 1 large incubator plus a “without walls” or virtual incubation programme, and Warwick Science Park with 4 incubators plus a “without walls” or virtual incubation programme.
- Parks devoting their energies to creating space to take the growth of successful small businesses in the years beyond incubation. In the UK there is a major problem in the provision of high quality property suitable for technology businesses that do not have strong balance sheets and many years of trading history. We describe these companies as having a low covenant strength. Clearly Science Parks have been breeding these companies for years and so it is appropriate that they should seek to help them move forward. Examples include Manchester and Surrey Parks. In the

case of Manchester, the Science Park has abandoned leadership in incubation activity in their region to Campus Ventures lead by David Auckland from Manchester University.

- Parks in which the partners see inner city regeneration as a primary goal. Aston SP has always been following this objective and Manchester SP appears to be becoming increasingly seen as a key player in regenerating a difficult part of the City in which they are located.
- Parks working to develop the bio-medical sector with specialist buildings and services aimed just at this sector. Manchester (outside its original Science Park), Liverpool and York are becoming the beacons in this arena.

However, while it may be possible to identify some 30% - 40% of Parks with an active pursuit of one or more of the above trends, it appears to me that there are many Parks which appear to have little sense of direction, allied to low growth. In my view this is a bad sign. If I were to be pessimistic I would say that UK Science Parks in aggregate risk being seen as “yesterdays news”. If I am optimistic then I could say that many UK Science Parks are in a hiatus period where they are re-evaluating their position and will emerge with new objectives and a new sense of direction in due course. Today, with the exception of a list of about 10 projects, I have to say that I am not particularly optimistic.

#### **Reflecting on the Future**

The world is changing fast. Those of us in the developed world are seeing our once productive manufacturing facilities which drove our wealth creation over many decades being stripped out from our countries and moved to SE Asia, Eastern Europe and other low labour cost economies. In the UK, manufacturing is today no more than 17% of the national GDP. Ten years ago it was over 22% and all forecasts show a one-way trend – down. The future of manufacturing in the UK probably lies only in either the highly productive high volumes or lower volumes of highly specialised products with a high advanced technology aspect to the manufacturing process.

Without productivity growth and new higher added value goods and services our economies will stop growing, and in my view it is a short road from no growth into decline as our economic competitors step in to take over. However, I see no reason for pessimism for the developed world. The more I travel the world the more convinced I am that we have an unassailable competitive advantage over the next 20 years at least, derived from the complex institutions, and soft and hard infrastructures – both private and public, we have created which actually work reasonably well. They are far from perfect but they exist and work far better than anything in the developing world.

I believe we can build even more complex structures to create our future competitive advantage. That advantage will arise I believe from better harnessing the creative and innovative potential of our population. I must give credit to IASP and Luis Sainz, for the visionary conference mounted in Quebec in September 2002 in which it is clear IASP have recognised the new environment and new mood within which Science Parks need to operate. I congratulate them for the much needed leadership they are giving.

However, having the vision is one thing, doing something practical to bring it about while remaining solvent is another. Let me make a few suggestions of what I think may be realistic in the UK context.

Culturally the British tend to run away from the “Big Vision”. Having vision involves emotion first although it is set in the context of rationality and I am afraid that as a nation we are very poor at the emotion thing! So the first step is to break down the vision into goals and ideas that appeal to rationality first and emotion second. I sense this is actually occurring. There is a growing movement to drive public- private sector economic development in the direction of creating sustainable clusters. This is a rational interpretation of the vision of a creative and innovative, knowledge society. The cluster movement with substantial public sector funding behind it provides a large hook for the development of UK Science Parks over the next 5 to 10 years. But what is the appropriate role of Science Parks in all this.

The mistake in my view would be to just use the cluster argument to gain resources for Science Parks to build more buildings for the IT sector or the bio-med sector on the basis that more is better. More is a cluster. Used as the only argument, it would be wrong and it would miss the point.

Clusters do have a geographical context but they work because of the resources and infrastructures that they either gather around or that develop around them. I believe that the task facing Science Parks is to respond, with partners, to create the infrastructures that make groupings of businesses behave as highly creative and innovative clusters from which new economic activity will emerge. There will be a critical mass component to the development of clusters. However, with modern IT, the close physical proximity of businesses to each other, which was once essential to the proper functioning of a cluster may now be less important. Furthermore, the UK is a small country. From Warwick I can reach 60% of the UK’s population within 2 hours by car. It takes that long to get from one end of Silicon Valley to the other most days!

Science Park managements understand the processes of technical creativity and innovation. They know it is not easy, but few are experimenting with ways to make it happen more and with greater impact. However, most Parks are linked closely to one or more Universities, which are primary centres of creativity in our societies. This makes them potential players in the cluster game. But, if they are to be effective players they will need to broaden their skill base in two key dimensions:

- The development of new forms of built space that drives creativity and innovation. The live – work, café culture environments of many old city centres which attract creative people and cause them to mix and mingle and spark off each other is one possible example to learn from and adapt into today’s modern world
- The development of novel infrastructures and institutions, founded in what already exists, but probably built out of partnerships and alliances which bring together different skills with the aim of providing both the “glue” to hold the cluster together and the “oil” to reduce the friction that inhibits the parts from working together smoothly and creatively. The development of incubation as a process together with the creation of appropriate and reliable access to risk finance, specialist skills and management talent pools is an example of a new

structural form being built from broadly based alliances involving a few Parks, but there is still much to be learned to make the process efficient.

We know that the original US concept of a Science Park filled with technology businesses adjacent to a University is very inefficient in the volume of new technology transfer that it stimulates. In the absence of anything more than the property dimension, it is also relatively inefficient in stimulating innovation between companies. So, perhaps Science Parks should think of themselves as social engineering experiments designed to accelerate the rate of innovation – but to do this they will need to work with other disciplines and take a few calculated but affordable risks. From this may emerge a range of methodologies, which will become the bedrock for the efficient working of clusters in a modern society. If together with others, Science Parks can be a part of this process they will have proved their value and justified the faith that their founders and funders have had many times over.