

INCUBATORS AND SCIENCE PARKS IN THE UNITED KINGDOM



**A REVIEW OF SCIENCE PARK AND INNOVATION CENTRE
OPERATION IN THE UNITED KINGDOM**

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INCUBATORS AND SCIENCE PARKS IN THE UNITED KINGDOM

EXECUTIVE SUMMARY

In general, business incubators in the United Kingdom are frequently placed within larger science parks to defray the costs of the incubator. Most of the literature discusses incubators within the context of a science park rather than a stand alone entity and it is clear that that this is the preferred configuration and one that has had the most success. This review covers both science parks and incubators (referred to as Innovation Centres in Europe and the UK) and separates them where possible.

How do incubators in England, France and Germany perform? (graduation rate and years to graduation, sources of funding [original and current], level of outside investment in incubator businesses, growth/failure of incubator businesses, etc.)

▪ **French and German Incubators**

The only available information on Germany and France to be found in England was severely dated (at least ten years old) and not useful to this report. There is one report on German incubators which has recently been completed, but is currently available only in German. I will pursue this at a later date, since it is due to be translated some time in the next year. As a result, this document will focus only on incubators in the UK.

▪ **Graduation Rate/Years to Graduation**

Information on graduation/failure rates was not largely available, and incubator staff were not particularly forthcoming on this issue. However, as Chart S1 below shows, in a survey of science parks between 1985 and 1990, eight percent of the tenants are known to be failures, while 63 percent have survived and remained on the park, and 20 percent who have left the park have also survived.

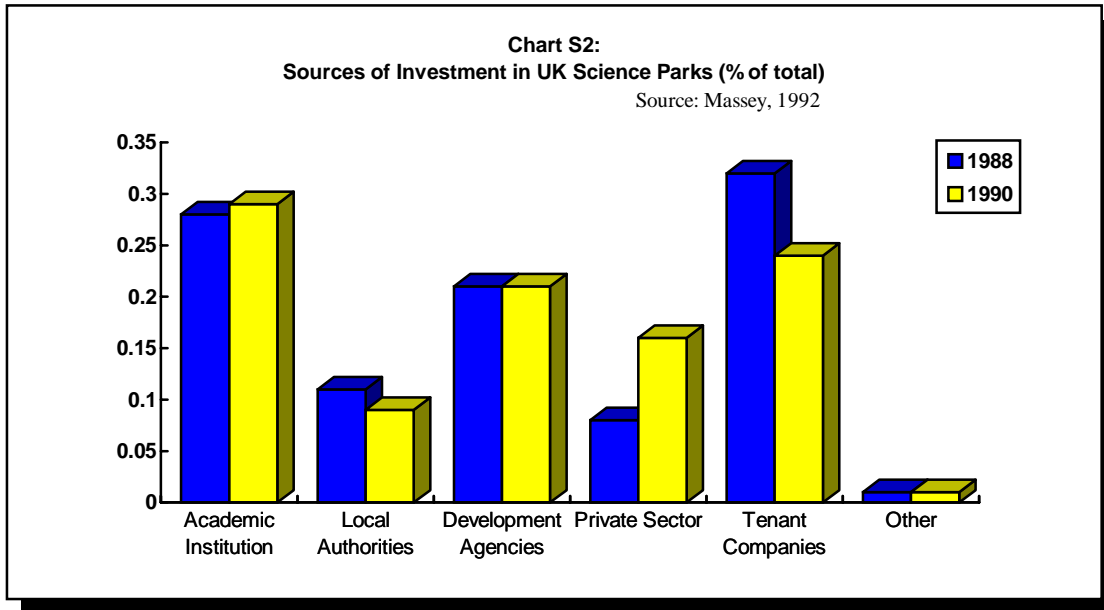
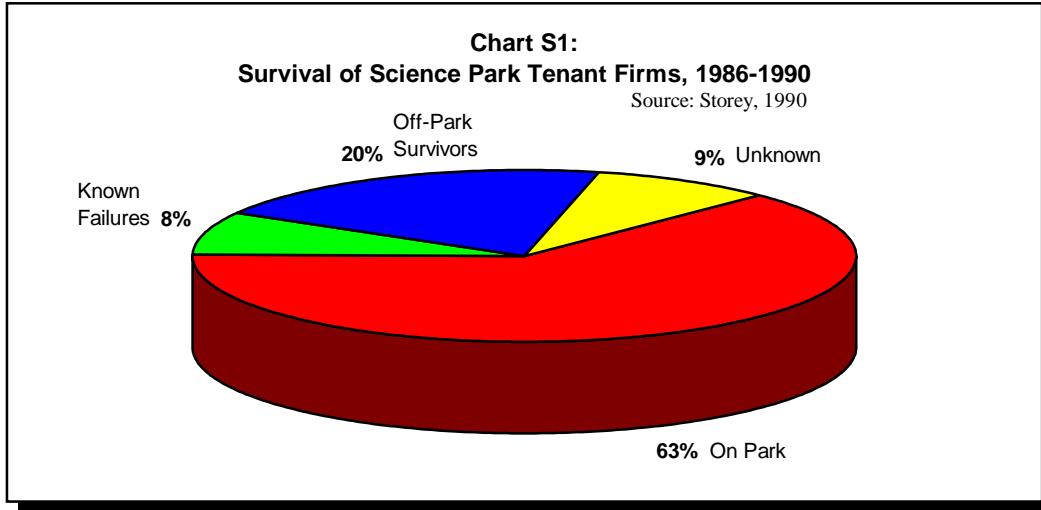
Years to graduation varies according to facility, however, leases are not normally carried for longer than three years. Average tenant stays range from six to thirty-six months.

▪ **Level of Outside Investment/Funding Sources Over Time**

Most science parks in the UK are owned entirely or in part by higher education institutions (HEIs). Many of these HEIs then team up with local authorities, regional development agencies and/or private sector organizations.

The majority of investment in science parks is derived from academic institutions, development agencies, the private sector, and tenant companies. However, as Chart S1 below presents, tenant company investment has declined since 1988 while private-sector finance has doubled.

Over the years, it appears as though the financing structure has stayed largely the same, with costs shared between original partners, public and private. However, as many science parks have grown, private sponsorship (i.e., major banks and corporations) of new accommodations is common.



What are their characteristics? (location, size, capital improvements, management structure, avg. price/sq. ft., avg. square feet, annual operating costs, cash flow, avg. number of companies, avg. number of employees, years in existence, number of jobs created over time, ratio of service companies to manufacturing, number of jobs created over time, operating policies)

▪ **Location/Size/Capital Improvements**

Innovation centres and science parks are located throughout the UK, but are primarily connected to universities located in urban areas. For the most part, buildings were designed and constructed specifically on vacant university or public land designated for science parks. Many science have started with innovation centres and then branched out (as planned) as companies graduated from their incubator space

The average size of innovation centres in the UK is approximately 24,000 feet with room for about 25 businesses.

▪ **Avg Price/Sq Ft/Annual Operating costs/Cash Flow**

This information was not available.

▪ **Avg Sq Ft/No. of Companies & Employees/Years in Existence/Jobs created over time**

The oldest science park in England is Aston science Park which was founded in 1983. Since then there has been a steady growth of innovation centres and science parks throughout the UK. In a 1990, survey as presented in Table S.1 below, science parks hosted approximately 1,000 businesses which employed almost 15,000 people. From 1985 to 1990, science park jobs more than quadrupled.

**TABLE S.1:
SCIENCE PARK TENANTS AND EMPLOYMENT**

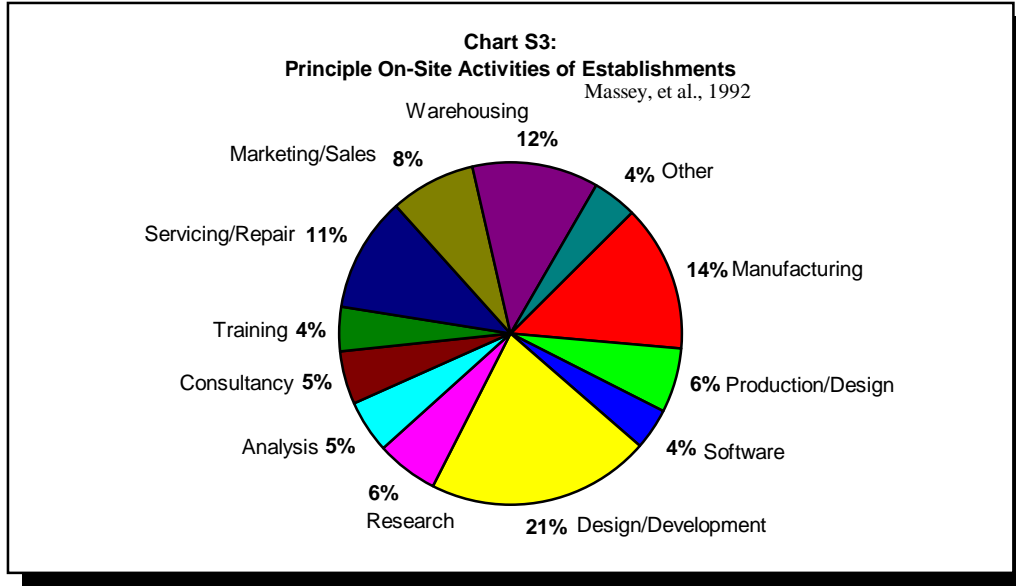
	1985	1986	1987	1988	1990
No of Parks	21	28	33	38	39
No. of Tenants	301	412	807	807	1,012
Total No. Employed	3,800	5,300	10,540	10,540	14,708
Avg. Employment per Tenant	12.6	12.9	13.1	13.1	14.5

Source: Massey, et al, 1992.¹

▪ **Ratio of service companies to manufacturing**

There are a number of different activities which take place in businesses located on UK science parks, however, over 20 percent are involved in some sort of design and/or development. As shown in Chart S2 below, only 14 percent of all businesses located on science parks are involved in manufacturing.

¹ Massey, Doreen, et al. *High-Tech Fantasies: Science Parks in Society, Science and Space*. Routledge, London, 1992.



▪ **Operating policies**

Information on operating policies was not available.

Has the incubator identity changed over time?

For the most part incubators identities have remained static, although they have rarely taken on more than a general identity in the first place (i.e., technology oriented, information technology oriented). One change that may have occurred is the reduction in overall research and development at science parks over time. Some research suggests that current R&D as a percent of overall business is the same in science parks as it is in businesses outside of science parks. This may be because science parks have to focus more on profitability than technological innovation and advancement, and so are more and more willing to take any tenant which can pay the rent.

How many years to self-sufficiency? Do they have to become self-sufficient? How many companies at start-up and currently?

Like their counterparts in the United States, innovation centres are usually given five years to reach self-sustainability, although, in some cases, they have only two to three years if there is no capital debt.

What is the structure of their boards and management?

Like the United States, the innovation centres/science parks are usually structured with a working board that aims to maximize its assistance to the incubator and client companies. The Board usually has a range of experience including: innovation centre supporters, networkers,

property/business developers, business assistance providers, investment experts, entrepreneurs and product/service developers or providers.

Management structure is also pretty much the same with incubator duties split between facilities management (i.e., day to day infrastructure demands) and business management (i.e., help with business planning, accounting, finance). The role of the director is to provide business planning, marketing, accounting and management skills to client companies. In particular, the director usually has entrepreneurial experience and is able to spend significant time with the incubator clients.

Do the incubators take equity positions in the client companies?

Yes, and the tenants also take equity in the incubators.

Do they take a stand on labor disputes?

Information on this was not available.

Do they offer shared equipment? Is there an opportunity for a standard and premium fee that companies may pay for increased services? Do they pay fees?

Like their counterparts in the US, innovation centres are designed so that tenants can share equipment and services. Depending on the incubator, some of those services are not free of charge. Most incubators charge for word processing and secretarial duties, however, others charge for almost every item including photocopies.

In some incubators, business consulting services (i.e., business plan development, accounting) are offered free of charge while others expect payment. In some cases, innovation centres contract out to external business consulting services which tenants may use after establishing terms of payment on their own.

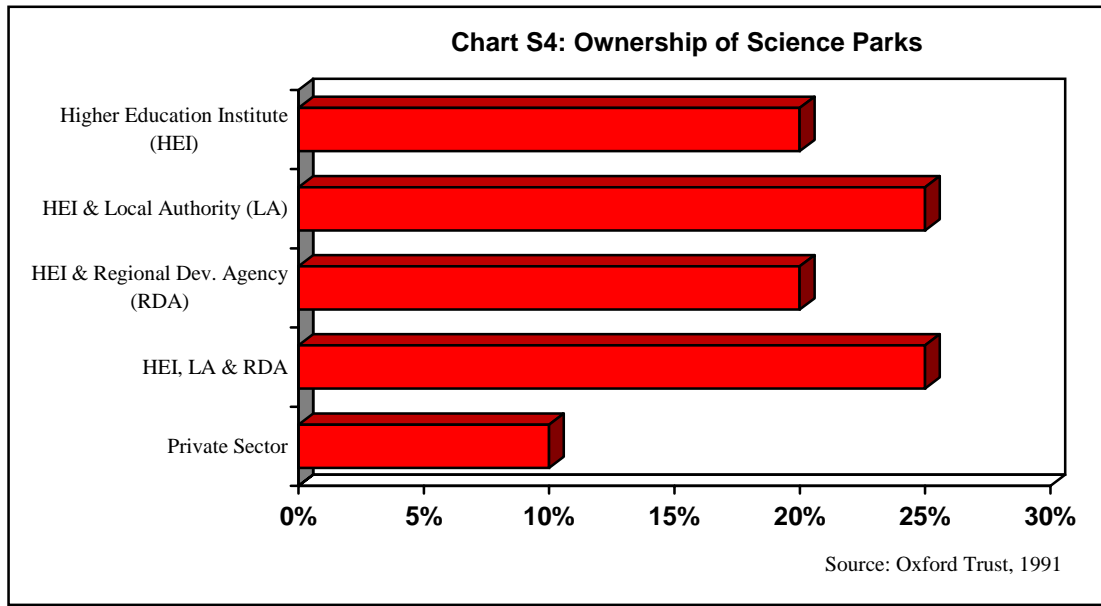
Do incubators have any special relationships with money suppliers?

Most science parks and innovation centres in the UK have special relationships with banks, venture capitalists, angels, and finance networks to help their tenants make the right contacts. In addition, most tenants believe that their position within the innovation centre provides an appropriate level of prestige which gives them an advantage when looking for money.

What special/legislative support (local, county, national) was necessary to launch the incubator?

In most cases, science parks and innovation centres in the UK are partially owned by either local or regional authorities, or, sometimes, both. As presented below in Chart S3, roughly 70 percent

of all science parks can lay claim to, at least, partial public ownership. Local and regional Public investment has also proved crucial to science park success.



Are there outreach programs for the communities?

Yes, research in the UK has shown that the concept of the incubator and science park are not well understood, which means that marketing has to both explain the concept and generate demand. It may also be necessary to explain the idea to local politicians and the population. Indeed, there is a strong sense in Britain that the local community should be firmly involved while the project is being developed and implemented. Information should be easily accessed, and local businesses as well as the general population should be encouraged to “read up” on the facility.

In addition, since most companies relocate within the area (in the US roughly 80 percent stay within the same neighborhood or city) it is important that the incubator gain the financial, moral and public relations support of local communities. This is considered crucial in leveraging additional services and/or support from potential partners and others in the community.

Are there marketing programs for the incubators? How do they market themselves?

Yes, marketing programs are quite extensive and involve a variety of tools from the media to professional promotional material. Innovation centres frequently host special events such as receptions and seminars. UK research has determined that hiring a special sales team has rarely been as successful (but it is always more expensive) as relying on promotion through contacts at host institutions and those sitting on the board.

Do they focus on specific industries? What is their criteria for company selection?

Most innovation centres place an emphasis on new technology and knowledge oriented businesses, but few actually focus on specific industries. This is most likely due to the size of the country and its smaller industrial base when compared to the United States.

The only information on selection criteria was a fairly broad set of standards established to ensure a proper mix of tenants in the incubator. Ideally, an incubator should have four types of businesses comprising:

- “Up and coming: that show significant promise;
- “Flyers,” successful, fast growing businesses that are getting ready to graduate;
- “Long shots” that benefit just by being located in the incubator; and,
- “Anchor tenants” which are established businesses which benefit from being in the incubator, but which require little or no attention from the director.

What specific needs do they fill for their clients? Do they offer any kind of rehabilitation if a company is “sliding?” Do they offer ancillary facilities/services? (additional research, market analysis, etc.)

No incubator likes to kick out “sliding” clients and most will forgo rent for a brief period of time to help companies in need, and of course, business advice is always available. In addition most incubators offer a combination of the following services:

- The incubator director’s and staff’s knowledge, experience and skills as well as emotional support;
- Close proximity to other entrepreneurs from whom experience and skills can be gained;
- Access to business training and educational programs;
- Access to systems which can provide financial support or investment;
- The knowledge skills and experience of a network of experts in business or technology;
- Access to resources and expertise through a network of contacts both national and international;
- The physical services of the incubators facility;
- An atmosphere or culture of business innovation and growth; and.
- A clear and marketable image which adds credibility and enhances the image of client businesses.

Ancillary facilities are often available, but usually at a cost.

What do they find are the most pressing needs of their clients?

While the specific needs of incubator tenants was never really addressed, a survey was carried out in which tenants were asked to assess the various attributes of their innovation centres. Overall, tenants seemed to be most pleased with their prestige addresses and least pleased with business and management advice as shown on Charts S4 and S5.

Chart S5:
Impact and Contribution of the Science Park for Tenants

Source: Newland, 1990

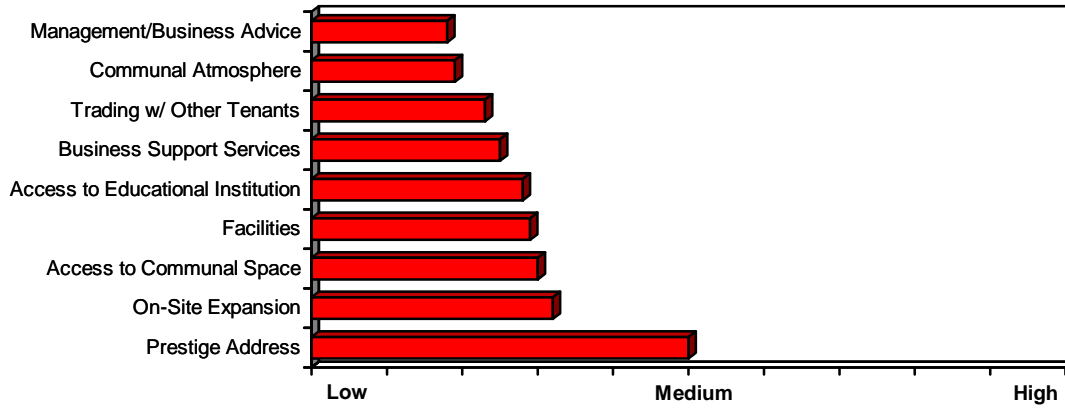
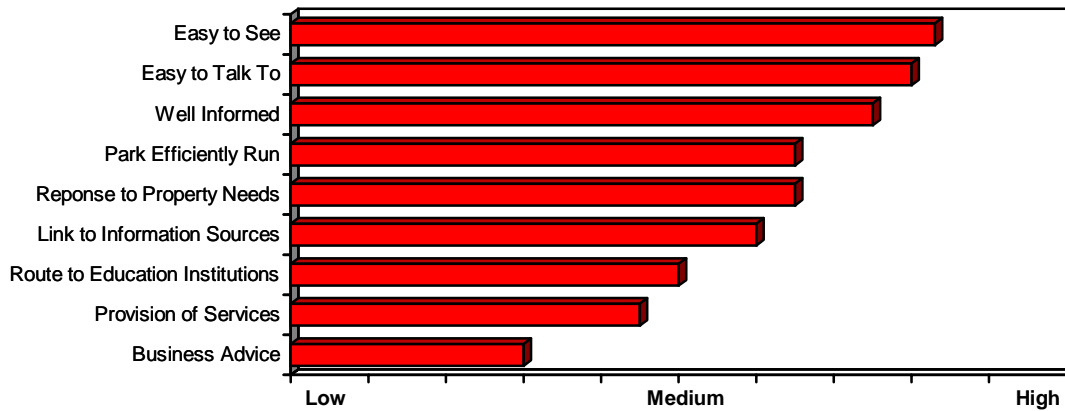


Chart S6:
Impact and Contribution of The Science Park Management



Do they offer support for export activities?

Yes, many science parks offer a variety of programs and networks to help businesses enter foreign markets. In addition, many science parks are receiving EU funding through a variety of business and technology innovation programs.

One particular type of incubator is officially sanctioned and initially financed by the EU through the European Business and Innovation Centre Network (EBN). These Business Innovation Centres are designed to apply an established approach to business incubation, offer specific types of advice and services and aim to create innovative firms in all sectors of manufacturing and allied services. There are currently 12 BICs in the UK, which, as members of the EBN can access the information and expertise of a network of centres across the EU. In the UK, BICs have had a mixed experience; many have proved beneficial to local job growth while others have found it difficult to establish clear identities as the self-financing pressures (after EU financial support ends) have led to workspace and services tailored to a broader range of businesses.

CHAPTER 1

INTRODUCTION

As stated above, in general, business incubators in the United Kingdom are frequently placed within larger science parks to defray the costs of the incubator. Most of the literature discusses incubators within the context of a science park rather than a stand alone entity and it is clear that that this is the preferred configuration and one that has had the most success. This review covers both science parks and incubators (referred to as Innovation Centres in Europe and the UK) and separates them where possible.

According to the UK Science Park Association, a science park in Britain would be defined as a property based initiative which:²

- Has formal operation links with a university or other higher educational or research institution;
- Is designed to encourage the formation and growth of knowledge based businesses and other organizations normally resident on site;
- Has a management function which is actively engaged in the transfer of technology and business skills to the organizations on site.

The UK Science Park Association has determined six criteria which have lead to the greatest success of incubators and science parks in Great Britain.³

- Strict control of tenants activities to maintain standards.
- Strict control of building design, land use and density, to maintain standards.
- Effective and professional management by full-time staff.
- Active participation by a higher educational institution (HEI) with a strong science base.
- Availability of supporting services, incentives and finance.
- Provision of incubator space in multi-occupancy buildings.

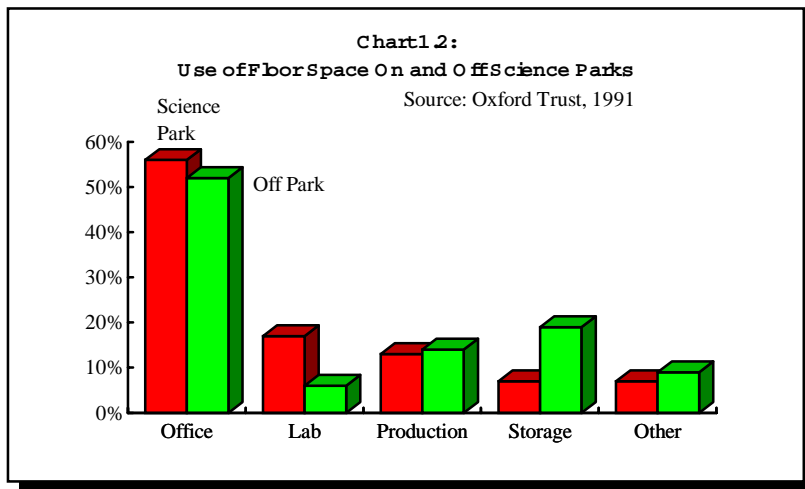
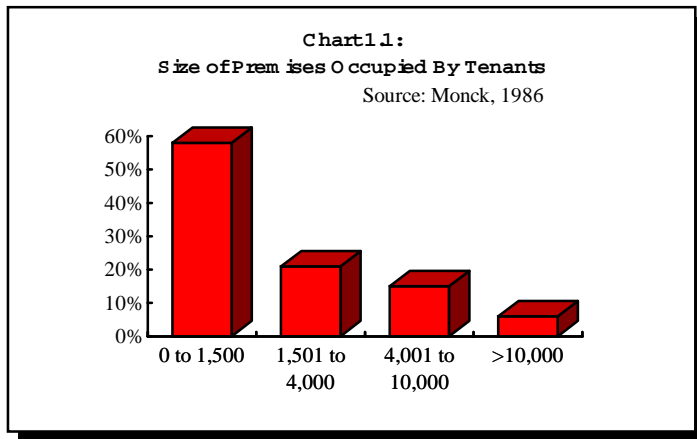
The majority of science park tenants in the UK occupy office space of 1,500 square feet or less as presented in Chart 1.1 below.⁴ For the most part, use of floor space in technology oriented science parks is consistent with similar businesses located outside of the parks. In general, office use accounts for approximately 50 percent of floor space. However, science park tenants tend to

² Quintas, Paul et al. "Academic Industry Links and Innovation: Questioning the Science Park Model." *Technovation*. Vol. 12, No. 3, 1992.

³ Broadhurst, Tom. "History of Science Park Development and the Existing Pattern." *Setting Up A Science Park*. UK Science Park Association, Annual Proceedings, November, 1988.

⁴ Monck, Charles. "Science Park Tenants and Their Growth Potential: Policy Implications." *Science Parks and the Growth of Technology Based Enterprises*. UK Science Park Association Proceedings, Annual Conference, December, 1986.

devote more space to lab use, while off park businesses provide slightly more for production. Use of floor space on and off science parks is presented in Chart 1.2 below.⁵



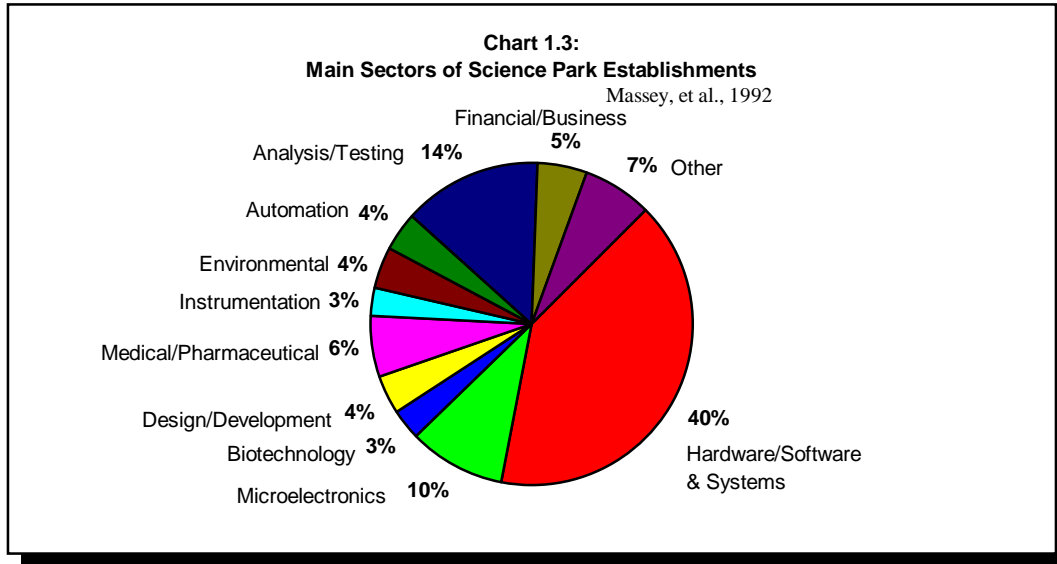
In the UK there has been a steady growth in science parks since the early 1980s. As Table 1.1 below shows, the number of parks nearly doubled from 1985 to 1990, the number of tenants more than tripled, and the total number of employed in science parks increased fourfold. Not surprisingly, as shown in Chart 1.3 below, computer related businesses dominate science park establishments accounting for 41 percent of the businesses in 1992, while environmental firms could only account for four percent. Finally, within British science parks, design and development is the principle on-site activity of the majority of the tenants, while manufacturing, service and repair, and warehousing are also major activities (see Chart 1.4, below).

⁵ Oxford Trust. *Technology Transfer, The Role of Science Parks*. Oxfordshire County Council, May 1991.

TABLE 1.1:
SCIENCE PARK TENANTS AND EMPLOYMENT

	1985	1986	1987	1988	1990
No of Parks	21	28	33	38	39
No. of Tenants	301	412	807	807	1,012
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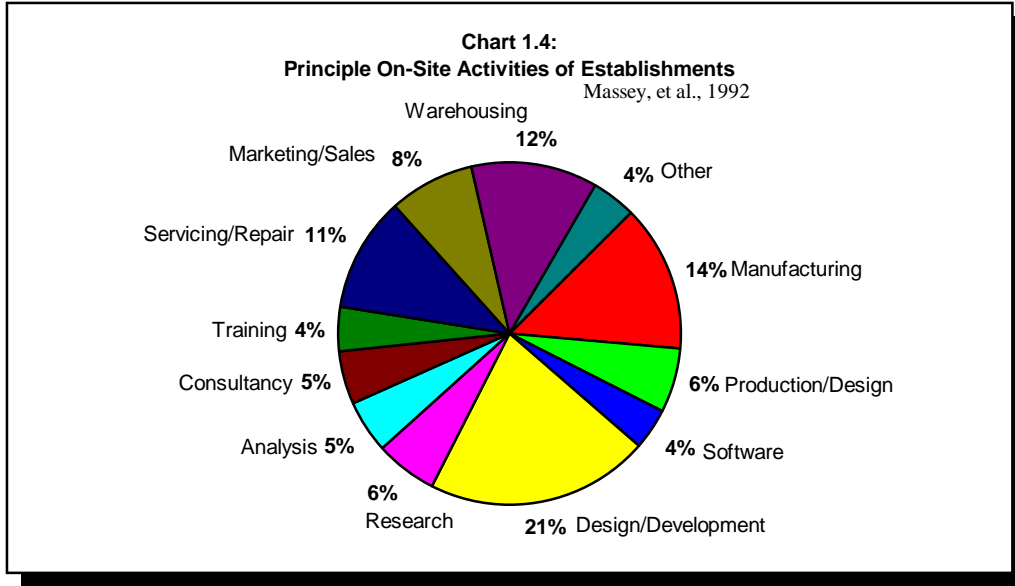
Source: Massey, et al, 1992.⁶



Business incubation has been more successful in Scotland and Wales than it has in Britain. Both Scottish and Welsh development agencies were quick to realize the benefit of incubators/innovation centres. Public development agencies have both supported individual incubators and have encouraged other organizations to do so as well. In Scotland, two organizations, Scottish Enterprise and Local Enterprise Councils (LECs) have linked up and identified key priorities (ie., encouraging new start-ups, improving access to finance, widening the entrepreneurial base) and matched them with key economic development organizations to foster incubator growth.

England, however, lacks a specific organization to champion the cause of incubator growth and monitoring. There are a number of diverse public and private sector organizations which take part in economic development, but no single institution (like the National Business Incubation Society in the United States) which tracks incubator growth and performance, and promotes incubator growth in the UK.

⁶ Massey, Doreen, et al. *High-Tech Fantasies: Science Parks in Society, Science and Space*. Routledge, London, 1992.



CHAPTER 2

TYPES OF INCUBATORS & SERVICES

TYPES OF INCUBATORS

There are three different types of incubators in the UK, namely Science Parks, individual incubators and Business Innovation Centres (BICs). While some science parks are mostly concerned with real estate development (ie, filling up office space and maximizing rents with little client management), a number of science parks have set up incubators as an integral part of the development. These *technopoles* tend to have the following characteristics:⁷

- University research seeking commercialization of some of its output;
- Incubator units for developing fast track businesses based on research output;
- A science/technology park next door where business can develop after leaving the incubator and relocate in the immediate area — this also enables companies associated or servicing a particular sector or group of businesses to locate nearby;
- Involvement of local angel networks and venture funds in providing equity capital to the fast track businesses;
- Local educational involvement whereby the skills necessary for the employees in the technopole can be introduced into the local curriculum;
- Strong local authority/Business Link (somewhat comparable to our SBA) interest in the potential job creation and regional development.

There are also a number of individual incubators established by entrepreneurs or research/education institutions with the primary goal of providing management support for usually innovative or high technology start-ups. These tend to be more property based but have developed links with local universities, research institutions or corporations, have linked up with local financing networks and offer some training and other services for their clients. These are considered to be more “ad hoc” and largely styled after the American style incubator.

The third type of incubator is officially sanctioned and initially financed by the EU through the European Business and Innovation Centre Network (EBN). These Business Innovation Centres are designed to apply an established approach to business incubation, offer specific types of

⁷ Within technopoles an incubator is part of an integrated project involving research and/or educational institutions and a range of other interests in creating regional growth.

advice and services and aim to create innovative firms in all sectors of manufacturing and allied services. There are currently 12 BICs in the UK, which, as members of the EBN can access the information and expertise of a network of centres across the EU. In the UK, BICs have had a mixed experience; many have proved beneficial to local job growth while others have found it difficult to establish clear identities as the self-financing pressures (after EU financial support ends) have led to workspace and services tailored to a broader range of businesses.

Technopoles

Within technopoles an incubator is part of an integrated project involving research and/or educational institutions and a range of other interests in creating regional growth. In general, science parks in Europe are referred to as technopoles.

Aston Science Park, University of Warwick Science Park and Milton Park in Didcot, Oxfordshire are good examples of technopoles. Both Aston and Warwick were among the first science parks in the UK. Both are focused on high technology and Warwick places a special emphasis on technology transfer. Initial investment in the science parks was provided by their respective cities, which provided the land, and through bank financing. Later developments have drawn significantly on EU financing.

Both established links with local universities and structured their science parks around their innovation centres, which were established first. The priority of later developments, made on a piecemeal basis when land and funding was available, was to provide accommodation for graduating businesses.

Each innovation centre offers workspace with small units, access to central office services, monthly rents at commercial rates, business advice and access to business support services. Clients are selected on the basis of their business plan and the nature of their business; there is emphasis on growth potential and use or development of technology. There is no formal policy, but businesses are expected to graduate within two to three years. Each incubator has set up a scheme for access to venture capital and made a priority of seeking access to EU initiatives and finance.

Milton Park is a private sector developed business park supporting new technology based firms. It now has about 3 million square feet with some 130 companies and an annual turnover of around \$20 million. Since the development of incubator space, employment on the park has risen from 2,400 in 1991 to 4,000 in 1996. The incubator, started in 1992, has 6,000 square feet and businesses can graduate from it into the Business Development Center (42,000 square feet) of which it is part. Incubator services are covered by rents.

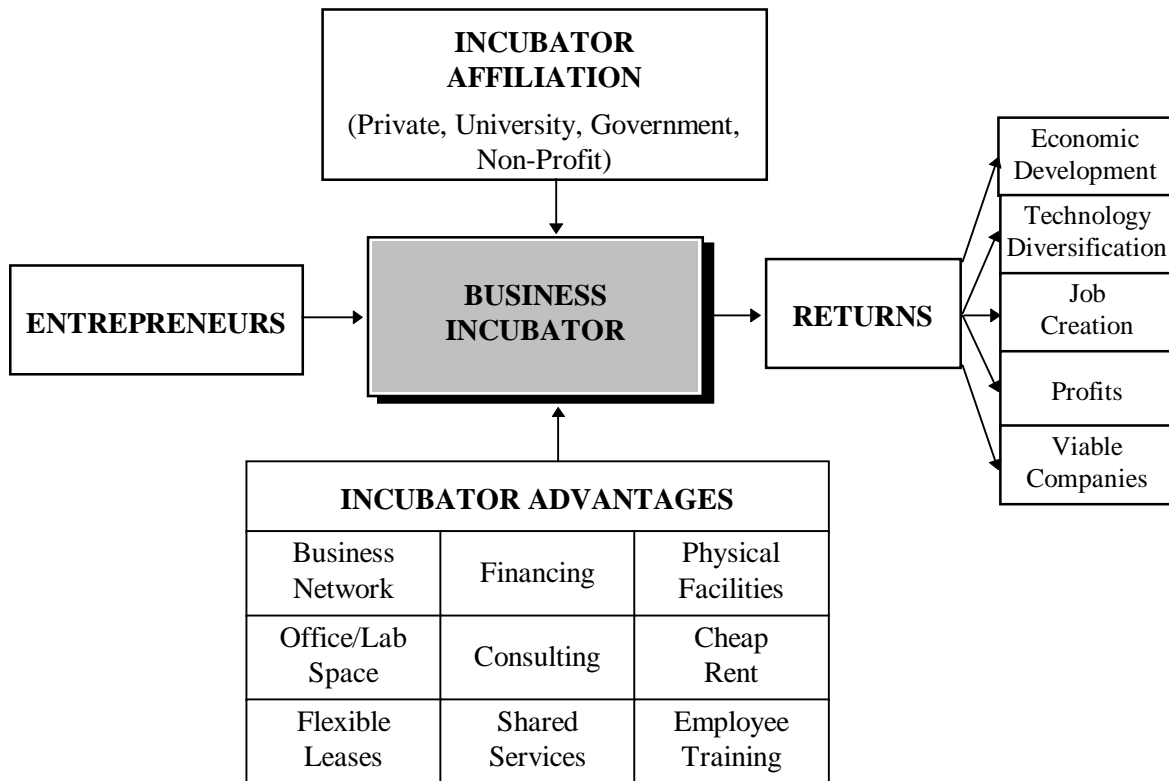
INCUBATOR SERVICES

A technology incubator offers controlled conditions for “hatching” new businesses. According to Smilor and Gill (1986), these controlled conditions include four types of resources: 1) secretarial support, 2) administrative assistance, 3) facilities support, and 4) business expertise,

including management, marketing, accounting and finance. The inputs and outputs of a successful business incubator model are presented below in Figure 2.1.⁸

FIGURE 2.1:
INPUTS AND OUTPUTS OF THE BUSINESS INCUBATOR

Smilor & Gill, 1986



While the services offered by a new incubator might be limited as it develops, in the UK, most incubators offer a combination of the following services:

- The incubator director's and staff's knowledge, experience and skills as well as emotional support;
- Close proximity to other entrepreneurs from whom experience and skills can be gained;
- Access to business training and educational programs;
- Access to systems which can provide financial support or investment;

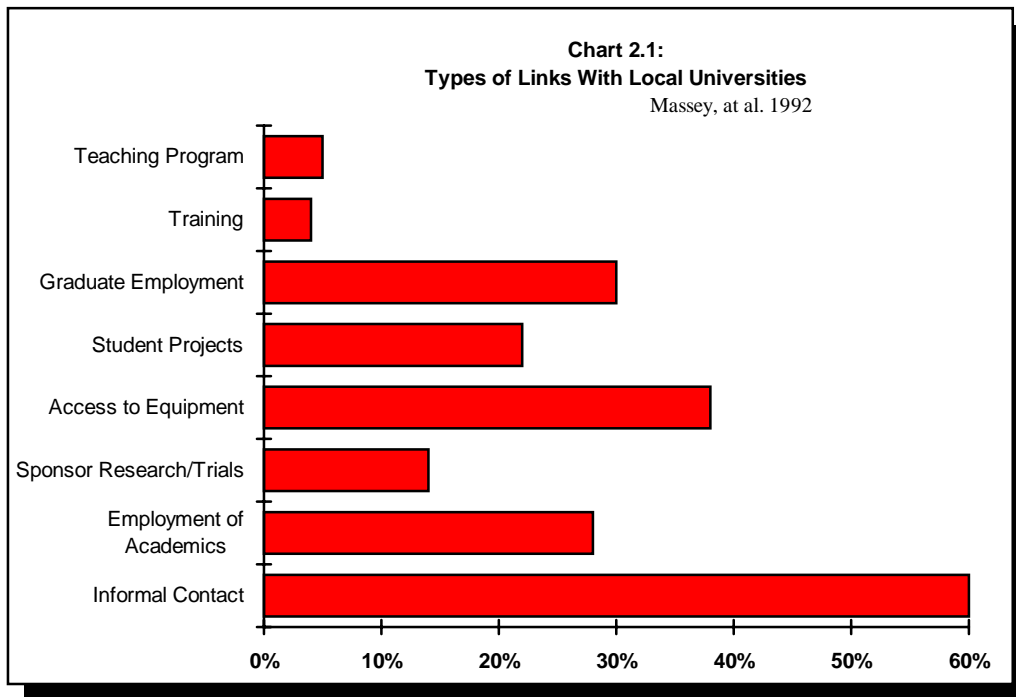
⁸ Smilor, Raymond W. and Michael D. Gill, Jr. *The New Business Incubator: Linking Talent, Technology, Capital, and Know-How*. Lexington Books, Lexington, Massachusetts, 1986.

- The knowledge skills and experience of a network of experts in business or technology;
- Access to resources and expertise through a network of contacts both national and international;
- The physical services of the incubators facility;
- An atmosphere or culture of business innovation and growth; and.
- A clear and marketable image which adds credibility and enhances the image of client businesses.

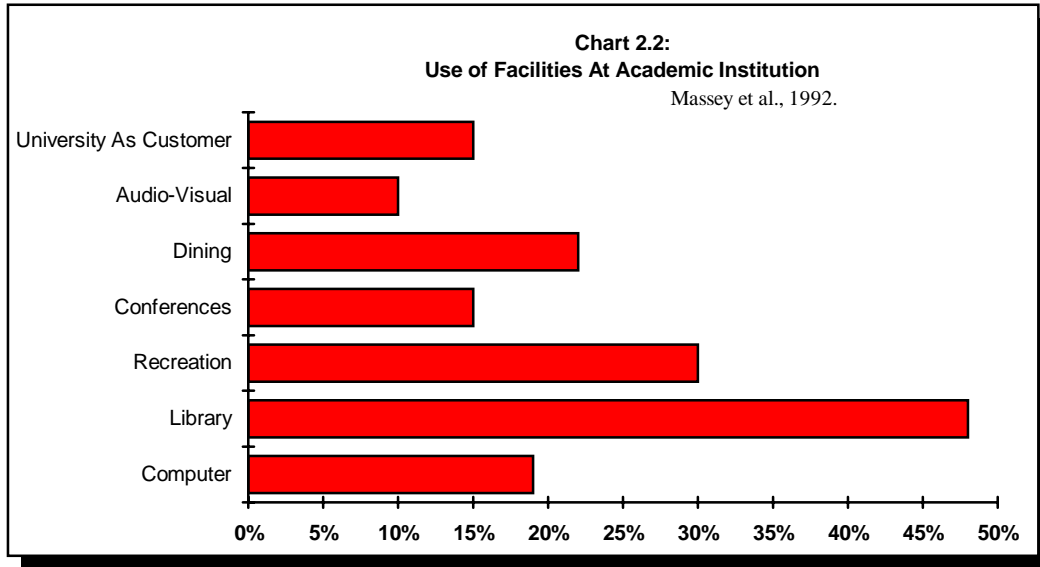
While all of the above services are valuable, research in the UK has determined that assistance in the form of direct capital investment, and on-site financial and management counseling are the services most valued by clients. (Although other research has suggested that shared services and logistical support has ranked higher in some cases.)

University Science Parks

At science parks connected to local academic institutions, some services and facilities are tied to the sponsoring university. In most cases, some sort of informal contact is maintained between science parks and their universities but rarely are research and trials academically sponsored (see Chart 2.1 below).



Facilities provided to science parks by their sponsoring universities ranged from computers to audio-visual equipment, but library service was the most frequently cited academic facility favored by tenants. As Chart 2.2 below presents, the majority of science parks have no facility links with their sponsoring institutions.

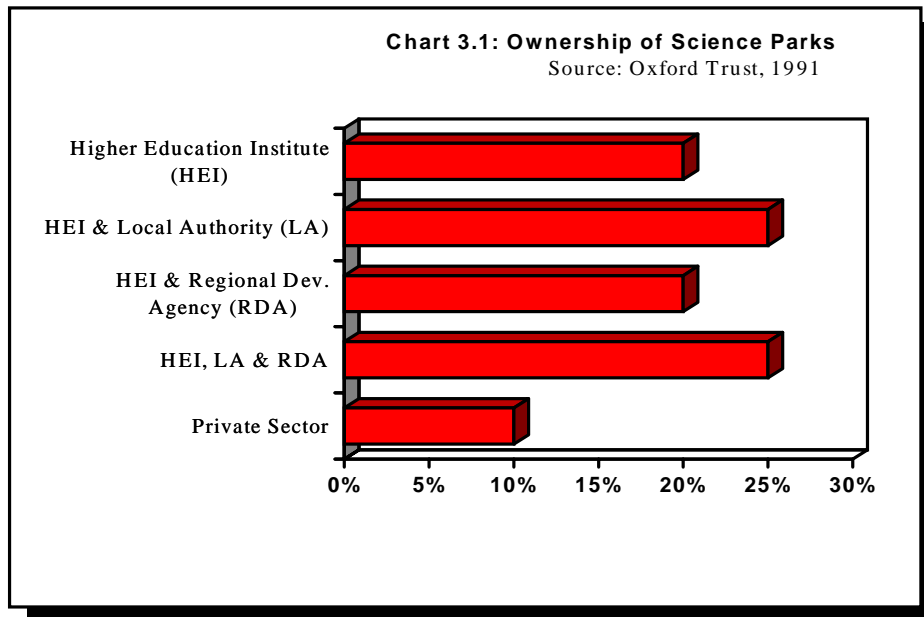


CHAPTER 3

FUNDING & FINANCE

FUNDING FOR INCUBATORS

Like the United States, UK incubators face similar problems trying to reach self-financing status and many new projects must be self-sustaining within two to three years providing there is no capital debt. The initiative for setting up science parks has mostly come from universities or other higher education institutions, as opposed to local authorities.⁹ However, while most science parks are owned either entirely or in part by universities (see Chart 3.1 below), they are often funded through a variety of joint ventures both public and private. In general, incubators tend to be financed in three ways, 1) universities, which will usually provide land and support during the first few years, 2) large companies which will usually provide land or vacant property and finance on a non-commercial basis, and 3) property developers and banks, which will most likely only provide fixed-term loans.



⁹ Carter, Norma. *Science Parks, Development and Management*. The Estates Gazette Limited, London, 1989.

Private Sector Finance

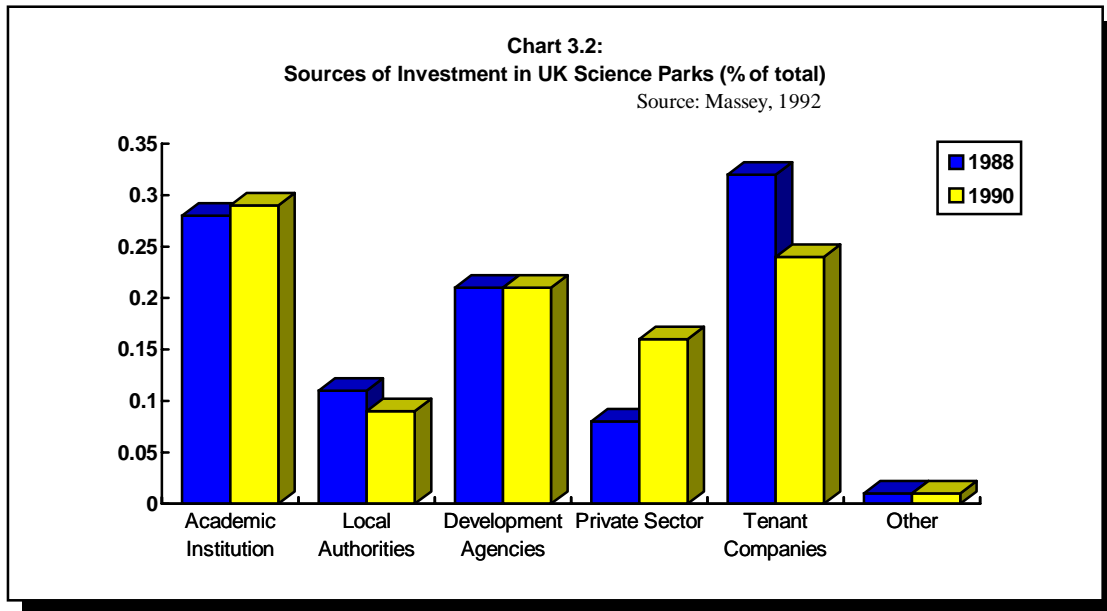
Those incubators most likely to be privately financed are those which are a small but integral part of a larger project. An example is Milton Park in Oxfordshire which has been developed purely by the private sector. The adjacent “industrial estate” benefits from a stream of small businesses emerging from the incubator and the costs of the incubator can be spread over the project as a whole. Another example is the science park where the incubator is part of a larger development. These types of developments have attracted a higher proportion of private sector investment than other forms of incubators and that trend is expected to continue.

Public Sector Finance

Individual incubators have been more difficult to finance and so have had to rely on sponsorship and public sector finance. This type of finance rarely requires repayment, but incubators do have to be self-sufficient after a specific period of time (usually three to five years). Public sector investment in existing incubators has largely been made through EU schemes, regional development bodies, and local authorities. While EU funds will continue to be a major source of finance, more local and national funding is expected to be made available in the future.

Science Parks

According to Massey (1992) the majority of investment in science parks is either through academic institutions (29 percent in 1990), development agencies (21 percent in 1990), and tenant companies (24 percent in 1990). However, as Chart 3.2 below presents, tenant company investment has declined since 1988 while private-sector finance has doubled.



FINANCE FOR CLIENT BUSINESSES

Like their counterparts in the United States, British venture capital firms do not invest in many small businesses. However, the threshold for investments is significantly lower than the US as British venture capital firms investments often start at less than \$1 million. Also available to small businesses are various loan schemes, 11 Regional Enterprise Funds, local seed capital funds, specialized venture funds (some backed by the EU which offers finance at subsidized or non-commercial rates), and angels for sums less than \$20,000.

Like the United States, angel networks are seen as having the largest potential for supplying small businesses with much needed capital. However, another option that is being explored and is currently in use in other European countries, is the mutual guarantee. The mutual guarantee is a self-help source of finance in which small businesses form groups or societies in which they all undertake to guarantee the loans of individual members. The UK National Association of Mutual Guarantee Societies is now in the process of developing a number of schemes.

The UK is also encouraging the development of venture funds which are specifically geared towards start-ups and small growth firms. These firms would be complemented by European funding or guarantees. Scottish Enterprise has already established a venture fund, half of which is provided from local private sector sources. This private sector element of the fund is underwritten by a guarantee from the European Investment fund (EIF).

CHAPTER 4

CREATING A SUCCESS

CRITERIA FOR SUCCESS

The UK Enterprise Panel conducted a survey of existing and planned incubators in the UK and devised their own criteria for a successful incubator.

Incubator Director and On-Site Business Expertise

The most important role of the director is to provide business planning, marketing, accounting and management skills to client companies. In particular, the director should have entrepreneurial experience and be able to spend significant time with the incubator clients.

Management Structure

The incubator should be structured with a working board that aims to maximize its assistance to the incubator and client companies. The Board should have a range of experience including: champions (see below), networkers, property/business developers, business assistance providers, investment experts, entrepreneurs and product/service developers or providers.

Community Support

Since most companies relocate within the area (in the US roughly 80 percent stay within the same neighborhood or city) it is important that the incubator gain the financial, moral and public relations support of local communities. This is considered crucial in leveraging additional services and/or support from potential partners and others in the community.

Incubator Champion

An incubator champion can be of considerable importance when promoting the incubator. Because an incubator usually comes together as a result of various disparate actors with multiple agendas, having one person or organization that can draw the group together and promote the incubator is crucial.

Selection and Survivability of Business Opportunities

Client selection is obviously one of the most important decisions impacting the ultimate success of the incubator. In general, the more clear and developed the set of selection criteria, the higher the chances of attracting successful businesses.

Access to Finance

This is one of the primary needs of businesses and one of the main reasons they locate in incubators. In general, businesses need help understanding what's available to them and how to get it. An incubator should have a strong understanding of what loans, funds and grants a client is likely to attract. It should also be able to provide links between businesses and investors.

Image or Perception of Success

Creating an image of success (i.e., marketing) helps establish the incubator in the community and the region, and allows it to attract resources and businesses more easily. This image is helped by:

- A new and/or attractive building;
- Links with key local organizations;
- Good press contacts and local public relations;
- Promising client businesses;
- Successful graduated firms; and,
- Key services or mentors.

Networks

Networks with universities, large companies, federal and local government authorities, banks, investors and investor networks, business groups and economic development agencies are all valuable to the successful incubator. Other key professional such as accountants, lawyers, consultants etc., can also be helpful.

Service Providers

It is important to develop important partnerships with key service providers to provide assistance to the incubator and its companies. Service providers include specialists in marketing, management, accounting, sales, human resources, production, and legal and intellectual property advice.

Achieving Self-Financing

Three models have been identified by the Enterprise Panel:

- *The Property Model:* Comprises front-end investment which covers the launch and operating losses until revenues are sufficient to cover the costs of the core program. The business plan of the incubator assumes no further financial support from the sponsors once self-financing. In the US these incubators are either over 40,000 square feet or part of a larger science park development.
- *The Property Service Model:* Revenues from the operation of the incubator facility are enhanced by the delivery of services (i.e., consultancy contracts and business assistance contracts through the incubator). Together, both sources of revenue cover operating costs. This enables individual incubators to be self-financing in much smaller (less than 40,000 square feet) properties, to be less dependent on anchor tenants, and to be more selective in selecting high growth potential businesses as clients.
- *Venture Capital Model:* equity/royalty positions are taken in businesses with high growth potential with the objective of cashing them in once the business offers substantial returns (usually at acquisition or public offering). Investments are made for 10 to 15 years. The sponsors are willing to cover the incubators losses until one or more of the equity/royalty positions is cashed in. The incubator needs an annual flow of five to ten high growth potential start-ups into the incubator for at least ten years.

Return from Client Businesses

Client businesses need to pay rent and fees for leased space and shared services. Incubator directors should also seriously consider requiring clients to compensate the incubator for strategic business assistance in cash, equity or royalties.

Mix of Client Businesses

Ideally for an incubator to have a successful mix of clients it should have four types of businesses comprising:

- “Up and coming: that show significant promise;
- “Flyers,” successful, fast growing businesses that are getting ready to graduate;
- “Long shots” that benefit just by being located in the incubator; and,
- “Anchor tenants” which are established businesses which benefit from being in the incubator, but which require little or no attention from the director.

MARKETING

According to the UK Science Park Association, there are three primary channels for successful marketing: 1) speeches and seminars, 2) the media and 3) informational material including videos and web sites. Initially, some sort of survey should be undertaken in order to establish the market. The Surrey Research Park initiated a questionnaire of potential tenants (in the computer and pharmaceutical industries) to find out what they looked for in a work space, their findings ultimately determined the incubator design. Box 4.1 below presents the results of the Surrey Research Park Market Survey.¹⁰

Winning Over The Locals

Research in the UK has shown that the concept of the incubator and science park are not well understood, which means that marketing has to both explain the concept and generate demand. It may also be necessary to explain the idea to local politicians and the population. Indeed, there is a strong sense in Britain that the local community should be firmly involved while the project is being developed and implemented. Information should be easily accessed, and local businesses as well as the general population should be encouraged to “read up” on the facility.

The Media

Local support is especially important if there are any contentious feelings toward the facility. If there are any negative issues associated with the park or incubator (ie, local farmers uprooted, habitat replaced) then the media is just as likely to focus on the problems as opposed to the innovative businesses and economic development. The standard procedure as defined by the UK Science Park Association (UKSPA, 1993) is to distribute at least one press release per month to keep both the media and the local population mollified (and to a certain extent, controlled) and informed.

¹⁰ Broadhurst, Tom ed. *The Development and Operation of Science Parks*. UK Science Park Association, 1993.

BOX 4.1:

↩ SURREY RESEARCH PARK MARKET SURVEY RESULTS ↩

- Eighty percent of research, development and design work was being carried out in space that was of office character.
- There was a demand for space designed for flexibility in use, ie which would allow for both expansion and contraction. Those interested in owner occupation expressed a wish for sites of sufficient size to allow future expansion.
- Speculative buildings should be able to be used for a variety of operations including wet and dry laboratories and office space. It became clear that raised floors should not be installed. Wet laboratory users required buildings able to accommodate fume extraction, fitted with adequate drain points.
- There was demand for small to medium sized units providing a high-quality image for occupiers.
- There was a demand for access to university resources.
- There was a demand for a good supply of parking space.
- There was a demand for highly trained personnel available for recruitment or consultancy through a university.
- There was a demand for short-tern leasing arrangements to ease moves generated by growth.

Promotional Literature

Attracting businesses to the incubator should be done through a mailing list which is either assembled or purchased. At Surrey they were seeking three types of tenants: 1) an anchor tenant from an economically stable industry, 2) any company with an annual turnover of between one half and one million pounds, and 3) small companies to fill the incubator centre. Surrey used senior scientists and managing directors for the direct mail campaign, which concentrated on those industries in which the area was considered strong. Mailing promotional material proved a successful strategy for units above 830 square meters.

In order to attract small and startup companies, brochures and information were mailed to banks, law firms and accountants in the hopes that these groups would promote the park if asked to give advice. In addition, a list of those who inquire about the park has been maintained and has proved successful in filling vacancies.

Other Marketing Tools

Special events have been used, such as receptions and seminars. Where the incubator has not yet been completed, events have been held at host institutions accompanied by special exhibitions. In most cases, it was determined that establishing a special sales team was rarely useful and always expensive. UK experience has shown that a more successful method to promoting an incubator is to use the contacts of staff members at the host institution and those sitting on the Board.

CHAPTER 5

TENANTS & GRADUATES

GRADUATES

There have been a small number of studies carried out in the UK concerning science park and incubator graduates. In a landmark 1986 study it was determined that:¹¹

- The major net effect in terms of observed employment creation is upon those academics for whom the science park acts as a stimulus for commercializing their research.
- For professional businesses, the effect of a science park is less clear in terms of performance, although satisfaction with the location and a willingness to expand on site suggests there may be performance benefits in the medium to long-term.
- While more park firms have informal contact with academics than off-park firms, in the more formal links such as employment of academics and sponsoring trials, off-park firms have equal or greater links.

Of those firms interviewed in the 1986 survey, over 60 percent were still located within the science park in 1990. Of those firms that moved from the park, approximately half were still in operation in 1990, although usually under a different owner. Chart 5.1 below shows the survival rate of science park tenant firms from 1986 to 1990. In addition, for those surviving firms, there was an increase in employment of 76 percent.¹²

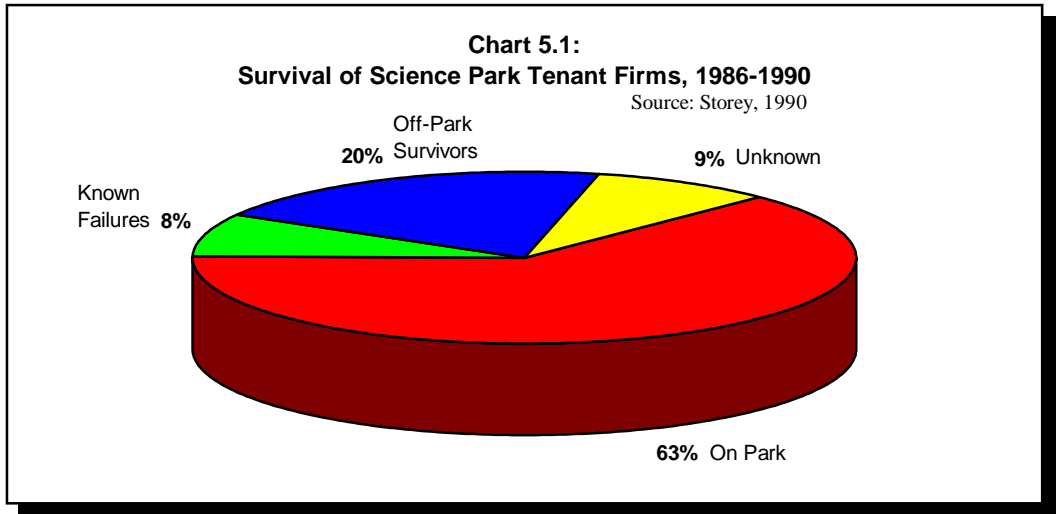
A smaller survey of UK science park tenants was also carried out in 1990 to determine the performance of surviving companies.¹³ In general it was found that:

- 60 percent of companies reported growth;
- Total turnover of companies increased by 65 percent;
- 47 percent of companies increase R&D efforts;
- Over 60 percent of companies experienced cash flow squeeze;
- Over 50 percent of companies relied upon finance from a single source;
- Only one company raised capital through sale of equity; and,
- 40 percent of companies experienced change in ownership.

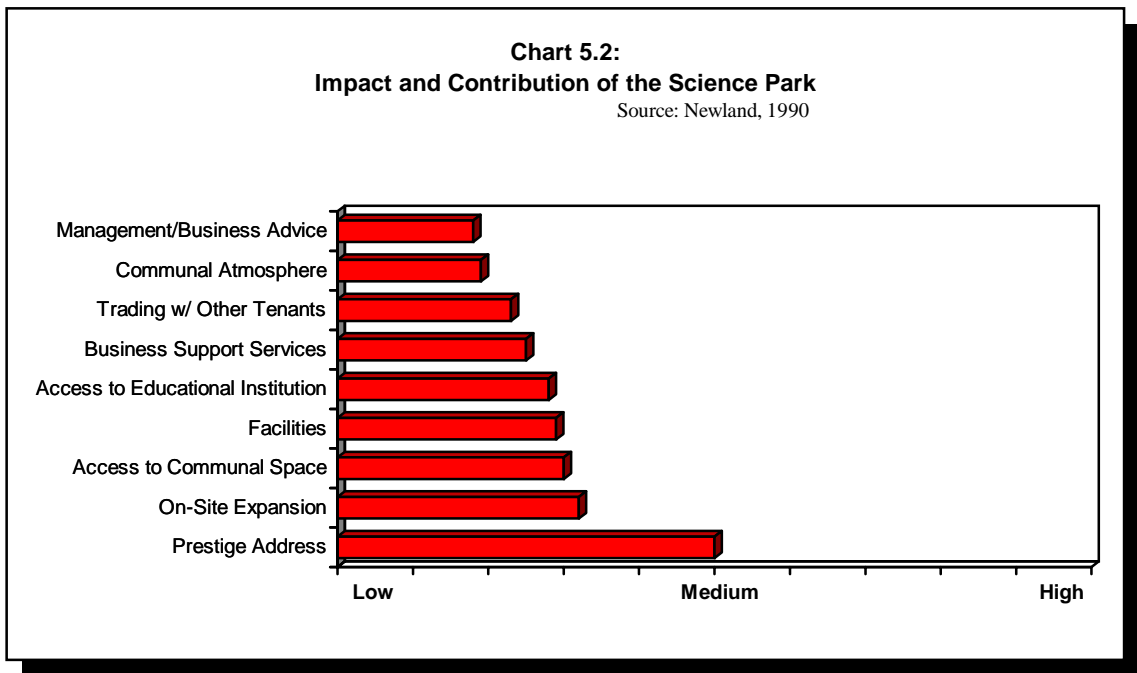
¹¹ Monck, C.S.P., et al. *Science Parks and The Growth of High Technology Firms*. Croom Helm, London, 1988.

¹² Storey, David and Adam Strange. "Where Are They Now? - Part I - Some Changes in Firms Located On UK Science Parks Since 1986." in *Science Parks in Urban and Regional Development. Proceedings of A Conference*. UK Science Park Association, November, 1990.

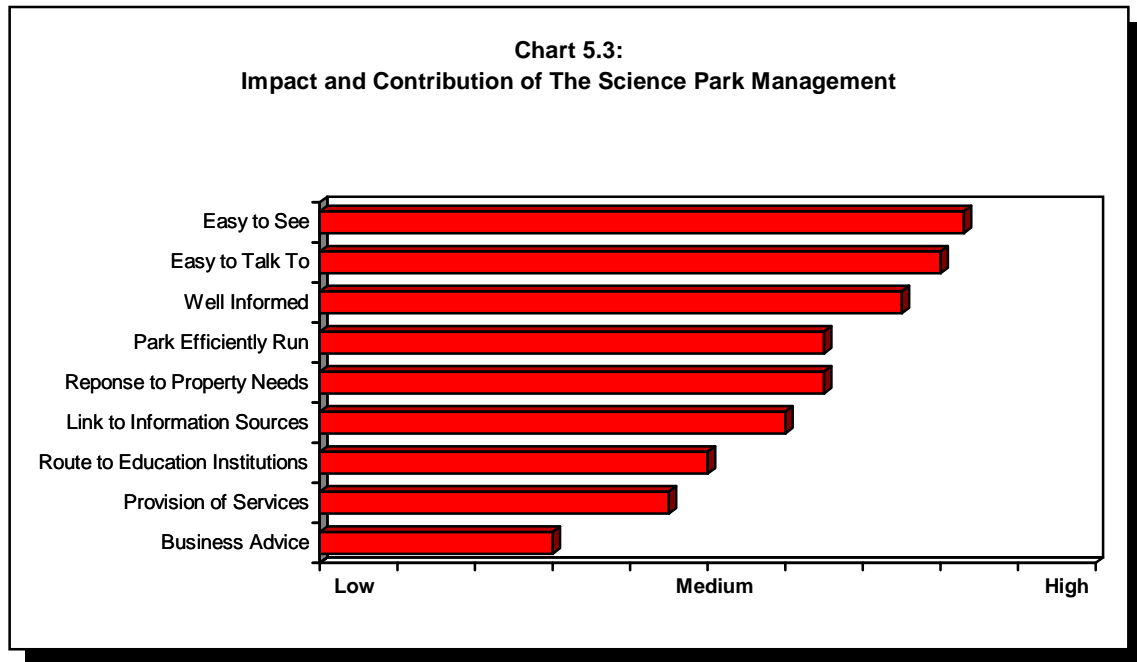
¹³ Newland, Andrew. "Where Are They Now? - Part II - A Study of Science Park Tenant Companies Surveyed in 1986." in *Science Parks in Urban and Regional Development. Proceedings of A Conference*. UK Science Park Association, November, 1990.



In the same survey, both tenants were asked what science park attributes were most beneficial to the client companies. Overall, the most important items for the tenants were having a prestige address, the potential for on-site expansion and access to communal space (ie, conference rooms). The least important attributes were the potential for trading with other tenants, the communal atmosphere, and the management and business support and advice offered by the science park. Chart 5.2 below presents the results of the survey.



Tenants were also surveyed on the contribution of the park managers and the management teams. While tenants gave high marks to the high visibility and availability of the management, provision of services and business advice were scored significantly lower. Chart 5.3 below shows the results of the survey.



A similar survey was carried out in the United States in which tenants were asked to place a value on various office and business services provided by their incubators.¹⁴ In terms of office services, the items ranked with major value included photocopiers, telephones, and conference rooms, while word processing facilities and a cafeteria, were ranked as moderately valuable. Access to government grants and loans, business plan assistance, and business connections outside the incubator held major value for the greatest percentage of tenants who ranked business assistance within their incubators. Table 5.1 below presents the results of the survey.

¹⁴ Mian, Sarfraz A. "Assessing Value-Added Contributions of University Technology Business Incubators to Tenant Firms." *Research Policy*. Vol. 25, pp. 325-335, 1996.

TABLE 5.1: VALUE OF INCUBATOR SERVICES AS RANKED BY TENANTS				
	No Value	Minor Value	Moderate Value	Major Value
<i>Shared Office Services</i>				
Photocopier	2%	10%	35%	53%
Telephone	14%	7%	31%	48%
Facsimile	11%	8%	34%	47%
Conference Room	3%	15%	37%	45%
Security	9%	13%	38%	40%
Receptionist	22%	19%	19%	40%
Custodial/Maintenance	3%	19%	39%	39%
Personal Computer	26%	3%	39%	32%
Shipping/receiving	18%	27%	24%	31%
Mail Sorting	10%	30%	33%	27%
Word processing/clerical	23%	26%	32%	19%
Cafeteria/lunch room	33%	11%	48%	8%
<i>Business Assistance and Networks</i>				
Government grants and loans	38%	14%	10%	38%
Business plan	12%	21%	35%	32%
Legal/government regulations	28%	30%	14%	28%
Tax assistance	36%	16%	20%	28%
Accessing outside capital	40%	24%	9%	27%
Marketing	32%	19%	23%	26%
Accounting	26%	35%	16%	23%
Personnel recruiting	35%	35%	15%	15%
Business connections outside the incubator	6%	21%	32%	41%
Business connections between tenants	10%	24%	37%	29%
Rent breaks	41%	8%	8%	43%
Source: Mian, 1996.				

Tenants were also asked to assess the value of university-related services. Overall, the greatest value was placed on the university image and access to labs, workshops and equipment, while the lowest value was placed on technology transfer programs and sports and social activities. The results of the survey are presented below in Table 5.2.

	No Value	Minor Value	Moderate Value	Major Value
University image	19%	12%	28%	40%
Labs/workshops/equipment	33%	16%	18%	33%
Student employees	13%	20%	35%	32%
Faculty consultants	20%	28%	26%	26%
Library resources	19%	26%	29%	26%
Related R&D activity	49%	9%	20%	22%
Education and training	69%	9%	13%	9%
Technology transfer programs	59%	23%	12%	6%
Sports and social activities	56%	29%	9%	6%

Source: Mian, 1996.

Finally, in a 1996 analysis carried out on firms located both on and off science parks, Westhead and Storey determined that there are five overriding benefits that businesses most valued after locating within a science park.¹⁵

- The first is that science parks provide a prestige site. Firms felt that locating on a science park connected to a higher educational institute (HEI) made the business more credible to its financiers and customers than a more conventional address.
- Second, the accommodation provided on science parks is generally of an extremely high standard, which is also likely to add credibility to a business.
- The third benefit is that the park is normally very close to, or even part of, an HEI. This means its existence provides an encouragement for academics to commercialize their research activities in a convenient location. It also provides the opportunity for businesses to liaise with academics in a professional and social context. Finally, it provided the business with the opportunity to use HEI facilities.
- The fourth benefit is that science parks normally have an individual - a science park manager - who's function is not only to manage the property, but also to act as a link with the HEI and to provide a networking service for other sources of advice and assistance to tenant firms.
- Finally, the clustering of high technology firms in a single location can provide benefits in terms of inter-trading between the firms and makes them a more obvious target for the provision of government grants, advice, assistance, etc.

R&D and Science Park Tenants

¹⁵ Westhead, P. and D.J. Storey. *An Assessment of Firms Located On and Off Science Parks in the United Kingdom*. SME Centre, University of Warwick, 1996.

It should be noted, however, that Westhead (1997) also determined that, contrary to current thought, firms located on UK science parks were not involved in significantly more R&D activities than their counterparts located off science parks.¹⁶ Westhead hypothesized that the supportive atmosphere of science parks would allow tenants to commercialize and diffuse more new products and services to new markets to a greater extent than similar off-park firms. He found, to the contrary, that on and off-site tenants tended to perform the same when compared by the following three variables: 1) new patents or applications taken out in the past 12 months, 2) number of new products/services launched in the last two years to the existing customer base, and 3) number of new products/services launched in the last two years to new markets.

Westhead suggests that the commercial pressures upon science park managers may have influenced the results. To maintain rental income, some park managers may have relaxed their selection criteria for tenants. As a result, some firms have moved to science parks simply because of the image and overall prestige of the site rather than because of access to the HEI facilities.

¹⁶ Westhead, Paul. "R&D Inputs and Outputs of Technology-Based Firms Located On and Off Science Parks." *R&D Management*. Vol. 27, No. 1, 1997.

CHAPTER 6

A SAMPLING OF PARKS & INNOVATION CENTRES

TECHNOPOLES

- Aberdeen Science and Technology Park
- Aston Science Park
- Oxford Science Park
- Warwick University Science Park
- York Science Park and Innovation Centre

■ Aberdeen Science and Technology Park (ASTP)

Aberdeen is primarily focused on the computer and software industry.

Partners

Aberdeen has three primary partners which also provide services to science park tenants; 1) Grampian Enterprise Limited, 2) Aberdeen City Council, and 3) Scottish Enterprise.

Grampian Enterprise is the area's leading economic development organization and is part of the Scottish Enterprise Network. Grampian's main aims are to:

- Assist and support the establishment and development of existing companies;
- Assist and support the expansion and development of existing companies;
- Attract new business ventures into the Grampian area; and,
- Develop and improve the skills of the region's workforce.

Grampian helps science park tenants through a variety of means including practical and financial support, product development support and advice, guidance in accessing funding for technology development, and equity investment.

Aberdeen City Council leases the land to ASTP and provides financial and practical help and advice to both the science park and its tenants. ASTP tenants are given the opportunity to join trade missions and are invited to participate in other trade and marketing events through the City Council.

Scottish Enterprise is one of the driving forces behind incubators and science parks in Scotland. Its primary goal is to build an internationally competitive software industry. To achieve this goal, Scottish Enterprise promotes international partnering and trade events, company start-up and growth centres, and general information on the Scottish software industry including appropriate companies located in Scottish science parks and incubators.

Facilities

Aberdeen is divided up into three campuses which offer various services depending on the individual needs of the tenants. The Software Centre provides 23 incubator-type accommodation suites specially designed for small software companies. The Centre offers low rent and flexible leases. The Centre also offers infrastructure support concentrating on IT and communications. Other services include secretarial, administration and office services, and closely tailored management development support. Office space range in size from between 130 and 250 square feet, allowing for progressive growth of companies.

Other accommodations offer a range of services and office sizes. The Balgownie Technology Centre provides ample meeting rooms and lectures and presentations are frequently occurring. Accommodation is managed and maintained by a Management and Letting agent which is also partially responsible for contacting potential tenants and marketing the science park.

Support Services

Grampian Enterprise assists tenants in developing their people, markets, products and infrastructure. Grampian helps companies access finance for product and market development and also maintains business and angel networks and contact with venture capitalists. Through Grampian, tenants may also establish links with various universities and research institutes including:

- University of Aberdeen;
- Robert Gordon University;
- The Macaulay Land Research Institute
- The Institute of Terrestrial Ecology;
- Scottish Agricultural College;
- Northeast River Purification Board;
- Agriculture and Food Department; and,
- Aberdeen Research Consortium.

■ Aston Science Park

Aston was founded in 1983 and is located on the 65 acre Aston University. The Park occupies 22 acres. The idea for the Park originated with Professor Sir Frederick Crawford, who had taught at Stanford during the birth of the concept of the science park. Taking the idea back to England, he was determined that Aston University and the Birmingham area would sponsor the first British Science Park.

The Birmingham City Council purchased the site and in Partnership with Lloyd's Bank and the University, the Aston Science Park was established. In less than one year, 15 companies were on-site and by 1986, over 40 were present with some of the original tenants expanding to even larger sites within the Park. In 1997, Aston houses over 90 companies. Approximately 50 percent of the space on the Park has been taken up by companies which started within the original Innovation Centre (incubator).

Facilities

The Business and Innovation Centre currently houses about 40 tenants with accommodation suitable for between one and twenty employees. Units size varies from between 125 to 2,500 square feet, with flexible leasing so that tenants can move into larger or smaller premises without penalty. The Centre offers shared or individual secretarial and reception services. Available on-site services include:

- Word Processing,
- Desktop Publishing,
- Report Production,
- Postal Services,
- Presentation Documents, and
- Equipment Hire (i.e., flipchart, TV, video).

The science park includes dining facilities and a licensed Bistro, as well as conference and meeting rooms. Services available for the University include the library, nursery/day-care centre, and sports centre. There is also a bank and post office.

Tenants are required to pay for all meeting and conference room use, equipment hire and business/secretarial services.

Support Services

The Aston management team provides hands-on business support including business development, planning, financial, marketing and credit control advice. The Park also maintains various contacts to promote business and technology exchange opportunities locally, nationally and internationally.

■ Oxford Science Park

Background

Located on 75 acres three miles south of the city centre, Oxford Science Park was founded through a joint venture between Magdalen College, Oxford and Prudential Life Assurance Company, Ltd. Oxford focuses on the growth of science-based businesses and facilitating technology transfer and business skills to companies (both start-up and medium and large firms) located within the park. Client businesses have included spinout companies from Oxford University, from Oxford based research establishments and from larger companies in the region. It has been responsible for the start-up of some 30 enterprises in areas ranging from software to biotechnology.

A survey of the Oxford Centre was recently completed reviewing their nine years of operation. The survey showed:

- 70 percent of companies that have left the centre are still in operation;
- 10 percent of those companies that have graduated have reached an annual turnover of between \$3 to \$5 million within a few years;
- Average stay at the centre is one to nine months;
- 60 percent of those graduating companies remained in the region, creating new regional employment; and,

- 60 percent of those graduating companies generate exports.

Facilities

Space is available via a monthly license agreement and license fees are increased the longer companies stay at the centre. This policy is designed to encourage companies to graduate and move on. Secretarial and office services are also available. The Centre provides the following services:

- Advice on business direction and strategy;
- Contacts with private and venture capital investors;
- Information on grants and awards;
- Help with local marketing of products and services;
- Business contacts with users of new products and technologies;
- Links with local providers of product development services;
- Innovation training programs and workshops; and,
- Direct investment in incubating companies by the Oxford Trust.

The science park is currently home to 45 businesses, 20 percent of which were attracted from overseas. Oxford offers units from 2,000 to 10,500 square feet. Magdalen Centre, located within the park, functions as an incubator, and provides even smaller units from 150 square feet and up. The Centre provides space for 36 firms which are often spin-offs from Oxford University or subsidiary offices of overseas companies attempting to establish themselves in the UK. Leases may be flexible and are available on a monthly basis.

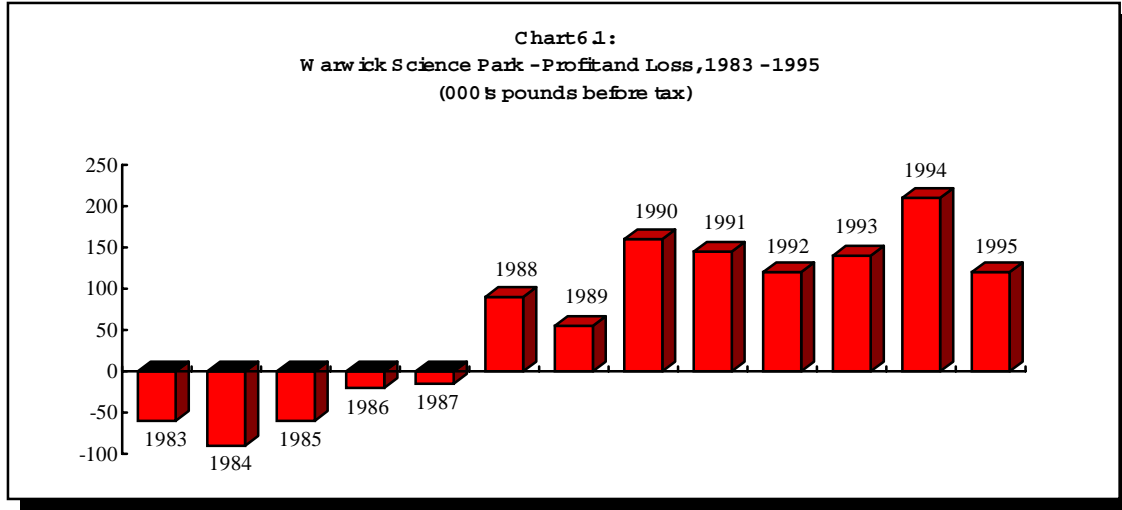
Export Assistance

International Science Park Alliance. Companies located at the science park also enjoy the benefits of links with science parks both in the United States and Japan through the International Science Park Alliance. The Alliance aims to stimulate exchange between companies and organizations on the Oxford Science Park, the University City Science Centre in Philadelphia, and the Kyoto Research park in Japan, and encourages them to promote their activities in each other's territories.

■ University of Warwick Science Park

Background

Warwick Science Park is currently home to about 65 companies and 1,000 employees. It was created in 1984 by the University of Warwick, Coventry City Council, Warwickshire County Council and the West Midlands Enterprise Board to facilitate technology transfer from the University to private industry and foster science-based businesses. The University provides a range of services to Park tenants including consultancy, test facilities and special computers and scientific equipment, the University library, short-term housing and special language classes and interpretation services. Tenants also have access to sports and dining facilities. As presented below in Chart 6.1, the Warwick Science Park has been operating "in the black" since 1988.



Facilities

The Warwick Science Park offers two facilities which support small businesses and start-ups, the Innovation Centre and Barclays Venture Centre. Both offer the following services:

- Reception and telephone answering;
- Meeting rooms and AV equipment;
- Fax and photocopying services;
- Equity and loan finance;
- Marketing into Europe;
- Students for projects;
- University skills and services;
- Access to Russia and Russian technology; and,
- Business planning and start-up advice.

Barclays Venture Centre

The Venture Centre provides 36,000 square feet which is divided into units ranging from 230 to 1,500 square feet. The Centre was built as an investment by Barclays Bank for £1.75 million and was designed to provide both starter space for new high technology companies and a stepping stone for existing businesses within the science park. Lease are from one to three years. For start-ups, the Centre provides access to sources of venture capital, grant aid, business planning and advice. There is also a cafe located within the Centre.

Innovation Centre

The Innovation Centre was created by the University and the County Council and offers 24,000 square feet developed to provide up to 26 units ranging from 250 to 2,000 square feet. The units were designed to accommodate smaller technology based businesses including laboratory and light workshop space. Leases can be obtained for six months to three years. Two innovative programmes available to Centre tenants include:

- **LINC** (Local Investment Networking Company) which provides access to a network of business angels willing to invest both development capital and commercial expertise and can help to unlock finance from banks and venture capital providers, and
- **Techmark**, a new subsidized scheme for assisting small, innovative companies to market their products or technologies to Europe. The Science Park's internationally experienced marketing team investigates and assesses the commercial opportunities and agree on an action plan with the client, which can range from licensing deals, technology transfer, and agency arrangements through to selling and distribution.

Other Services

Other special services offered at the science park include:

SPRINT (Strategic Programme for Innovation and Technology Transfer), a European Community funded programme which helps promote international cooperation in terms of direct business and research between companies and university departments. Warwick has developed its own contacts in France, Germany and Belgium.

The Student Projects Scheme, under which students are available to carry out eight week in-company projects - often ideas from the park companies that cannot be given the time or resources to develop.

ISO 9000 Quality Control Scheme, which is a project enabling companies to prepare for and obtain certification under ISO 9000.

Eastern Europe. The science park is opening technology and trade opportunities in Eastern Europe acting as an intermediary in securing reliable trading partners.

■ **York Science Park and Innovation Centre**

The York Science Park is located on 21 acres within the campus of the University of York. The primary aim of the park is to promote science, technology and knowledge based businesses. York Science Park was created through a joint venture between the University of York and P&O Developments Ltd. The Innovation Centre provides 20,000 square feet broken up into units ranging from 125 to 3,000 square feet

SECTOR SPECIFIC INCUBATORS

- Merseyside Innovation Centre, Ltd.
- St. Johns Innovation Centre
- Sunderland Business Innovation Centre

■ Merseyside Innovation Centre, Ltd.

Services and Facilities

Founded in 1981, Merseyside is a non-profit company providing business and innovation support to all sectors of industry and commerce. Services offered at Merseyside include:

- Video Conferencing Facilities,
- Business Planning Support,
- Management and Quality Systems Help,
- Technology Transfer Assistance,
- Product Development Support and Evaluation,
- Manufacturing Consultancy,
- EU Directives Monitoring and Assistance, and
- Local, National and European Funding Access.

■ St. Johns Innovation Centre

Background

Established in 1987, the Innovation Centre incubator was built as part of the St. Johns Innovation Park. The park and centre aim to promote the growth of early stage technology based businesses. The Centre is privately owned by St. Johns College, Cambridge University and is run to produce a commercial return. At the end of 1994, the park was occupied by 67 companies, almost all less than five years old. Over 1,000 people are employed on-site and the turnover of client business is in excess of \$80 million per year. Their success rate is over 88 percent.

The site of the incubator is located within the City of Cambridge on land that St. Johns has owned for approximately 500 years. The first building was constructed in 1987 and within three years two more buildings (24,750 and 33,580 square feet) were completed. In 1994, a fourth building was built.

Facilities and Services

Leases are on a month to month basis and are renewable for up to three years. Companies can graduate to larger units and land parcels are available for companies which require their own custom-built buildings. The Centre offers internet and email service for all tenants and places tenant information/advertisement on the web if so desired. Special STAR service is also available for qualifying companies that want an Innovation Centre “office” (providing a business address, telephone, fax and mail service) but are unable to take up residency at the park. Numerous start-ups have used the START service as the first stage towards becoming a tenant.

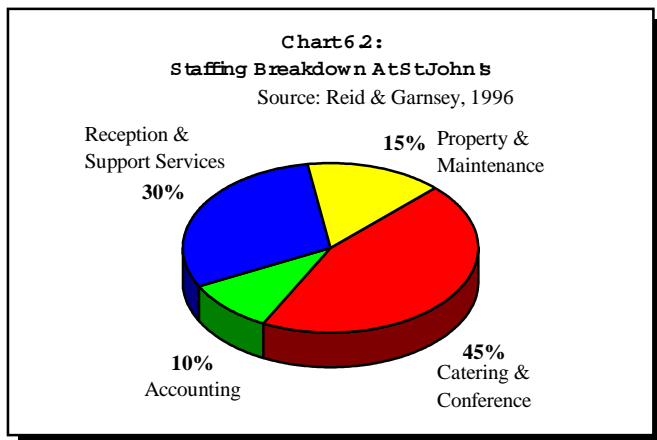
St. Johns works closely with a variety of local, national and international bodies such as:

- Training and Enterprise Council;
- Business Links;
- Chamber of Commerce;
- Government offices;
- Department of Trade and Industry;
- European Business Network;
- European Association for the Transfer of Technologies; and,
- United Kingdom Science Park Association.

The Centre provides free networking advice to tenants and makes recommendations on:

- Sources of assistance in the University,
- Product innovation, design and manufacture,
- Human resources management,
- Business planning
- The availability of bank finance, venture capital, UK and EU, grants,
- Marketing and public relations, and
- Training and development.

The Centre also provides on a paying basis, assistance in company administration (contracts of employment, staff handbooks); company reports (statutory reports); and accounting services (bookkeeping, budgeting). Other services include consultancy assignments (on a fee basis) which are in line with Park objectives (i.e., advising on Science and Innovation Park initiatives in the UK and overseas, running training programs for Russian Innovation Park managers for the European Bank of Reconstruction and Development, running workshops and seminars on technology transfer, innovation and business development). A breakdown of staff, including full and part time employees, at St. Johns is presented below in Chart 6.2.



The Innovation Centre also offers internet services, Email, a central server, advertising, conference space, presentation equipment and basic secretarial services all for a fee. A profile of existing tenants is presented below in Charts 6.3 through 6.6 and Tables 6.1 and 6.2.

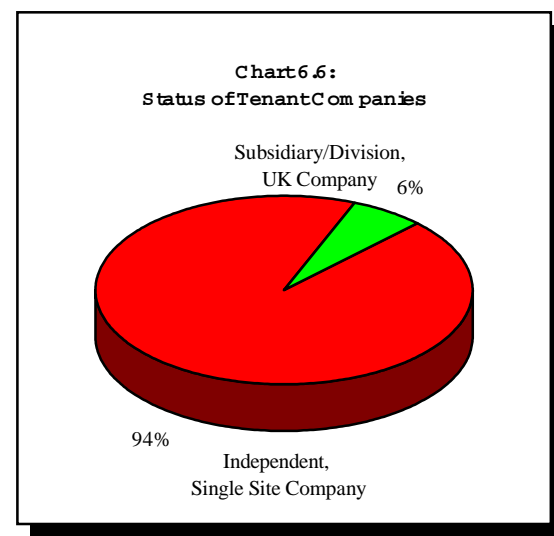
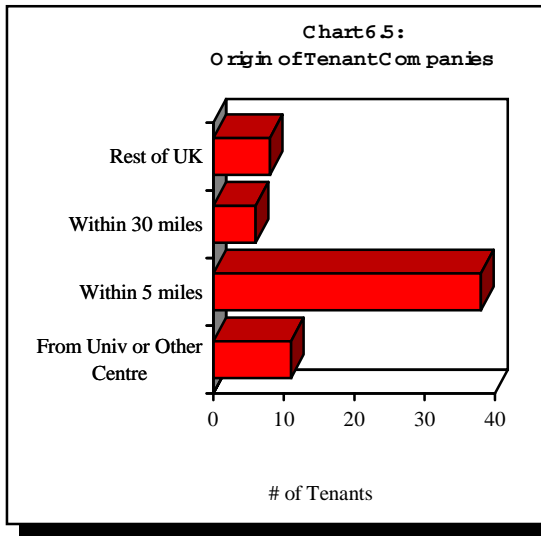
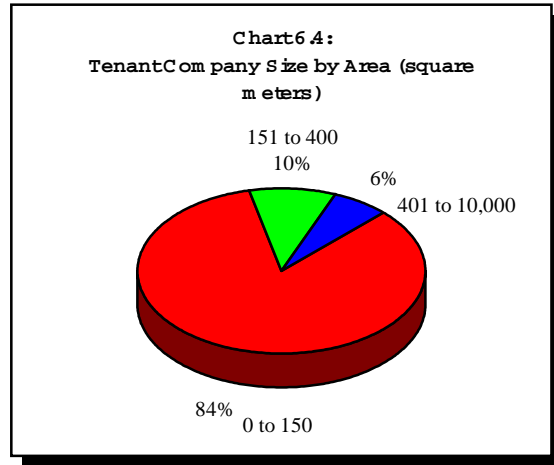
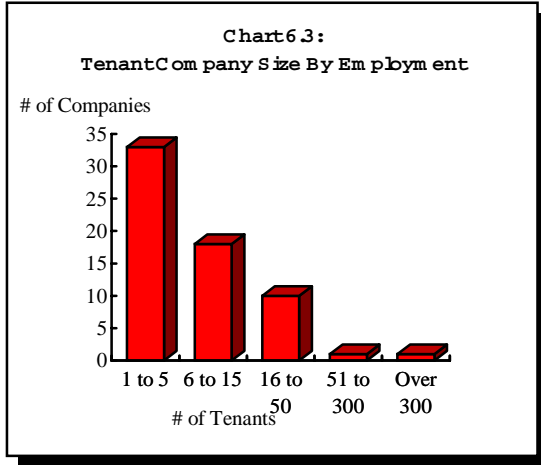


TABLE 6.1: TENANT MIX BY PRODUCT AREA		
Principle Product Sector	Number of Companies	Sq. Meters Occupied
Bio/Medical	6	809
Energy	1	28
Environmental	2	224
Computer/Telecoms	38	10,232
Industrial Technologies	6	426
Financial/Business/Other Non-technical	10	516
TOTAL	63	12,235

TABLE 6.2: TENANT ACTIVITIES	
Activity Undertaken on Park	Number of Companies*
Research and Development	29
Design of new products or processes	35
Manufacture	3
Assembly, Integration	0
Sales/Distribution/Warehouse	0
Servicing	0
Training/Teaching	1
Testing Analysis	37
Consultancy	3
* Some tenant companies are involved in more than one activity	

■ **Sunderland Business and Innovation Centre (BIC)**

Sunderland BIC is a full member of the European Business and Innovation Centre Network (EBN), an international association of more than 100 BICs throughout Europe. EBN was set up to encourage, coordinate, and develop BICs by ensuring a pooling of expertise and know-how, and by seeking partnerships in the areas of R&D, technology and marketing.

Facilities

The BIC offers office space ranging from 100 to 2,500 sq. ft and was constructed specifically to accommodate high-tech and IT businesses. It offers the full range of facilities (ie, conference and meeting space, reception, security, restaurant) including an all-day nursery. Business support includes:

- Business mentoring,
- Financial guidance,
- Innovation Loan Fund,
- Technical support,
- Sales and marketing support,
- Business skills training,
- Access to information on business opportunities, and
- Networking events.

Sunderland is looking primarily for businesses involved in manufacturing. They are interested in products or services that demonstrate innovation and can demonstrate a potential for growth.

Other Services

Product Development Unit (PDU). The PDU was formed to provide hands on assistance in all areas of product and process design and development. A business advisor is assigned to each proposal, who will then provide advice and support through each step of the project. Services include:

Product Protection Advice. The PDU provides each business with important security details, information on patents, and design registration.

Feasibility Studies. The PDU will conduct a feasibility study in order to highlight potential problems.

Concept Drawings and Models. Financing is unlikely for a project that cannot be visualized. The PDU helps businesses produce concept drawings and models which demonstrate how the product will appear in the marketplace.

Design and Engineering Drawing. The PDU can produce detailed design and engineering drawings which specify all calculations, component parts, relevant standards and suppliers necessary to take the project to the prototype or process machine stage.

GENERAL INCUBATORS

- Lancashire Business Innovation Centre
- Preston Technology Park

■ Lancashire Technology Management Centres

Lancashire offers a unique service called the Lancashire Business Package (LBP) available not only to businesses located within the Management Centres, but to all business located within the county of Lancashire. The LBP is financed through the Lancashire County Council and the European Community.

Innovation

Particularly interested in innovation, Lancashire provides regular seminars on *Managing the Innovation Process*, which are specially designed for decision-makers in small companies. An *Innovation Needs Analysis* is then available to identify and focus on the company's key strengths and weaknesses. From this, a tailored program is developed to help the company use innovation effectively. Initial consultations are free of charge and financial help is available to continue the process. These programs provide a range of specialist support including:

- Intellectual property support,
- Prototyping/testing
- Design support,
- Product/market research,
- Electronic trading and Email applications,
- Technical management information sources, and
- European technology databases.

Facilities

Lancashire also manages a range of investment funds, providing finance from £5,000 to £750,000. Investments are made through loans, equity or a combination of both, and are available for any type and size of business, from start-ups to well established companies. Office size ranges from 100 square feet to industrial units of more than 100,000 square feet, with flexible leases available. Business support includes:

- Management and supervisory training,
- Outplacement counseling,
- Skills training,
- Recruitment,
- Business reviews,
- Market appraisal, and
- International trade.

■ Preston Technology Park

Preston Technology Park was developed by Lancashire Enterprises, British Aerospace, and the Preston Borough Council with support from the Department of Trade and Industry and the European Commission. Preston focuses on technology-based products and processes and it offers units ranging in size from 390 to over 4,000 square feet.

Facilities

Preston offers a full range of administrative support and conference facilities, as well as specialist staff and innovation and technology management services. In cooperation with Lancashire, Preston offers the following workshops and services:

- Managing the innovation process,
- Innovation needs analysis,
- Technology opportunities program,
- Research and development gateway,
- Introduction to licensing, and
- Technology transfer.