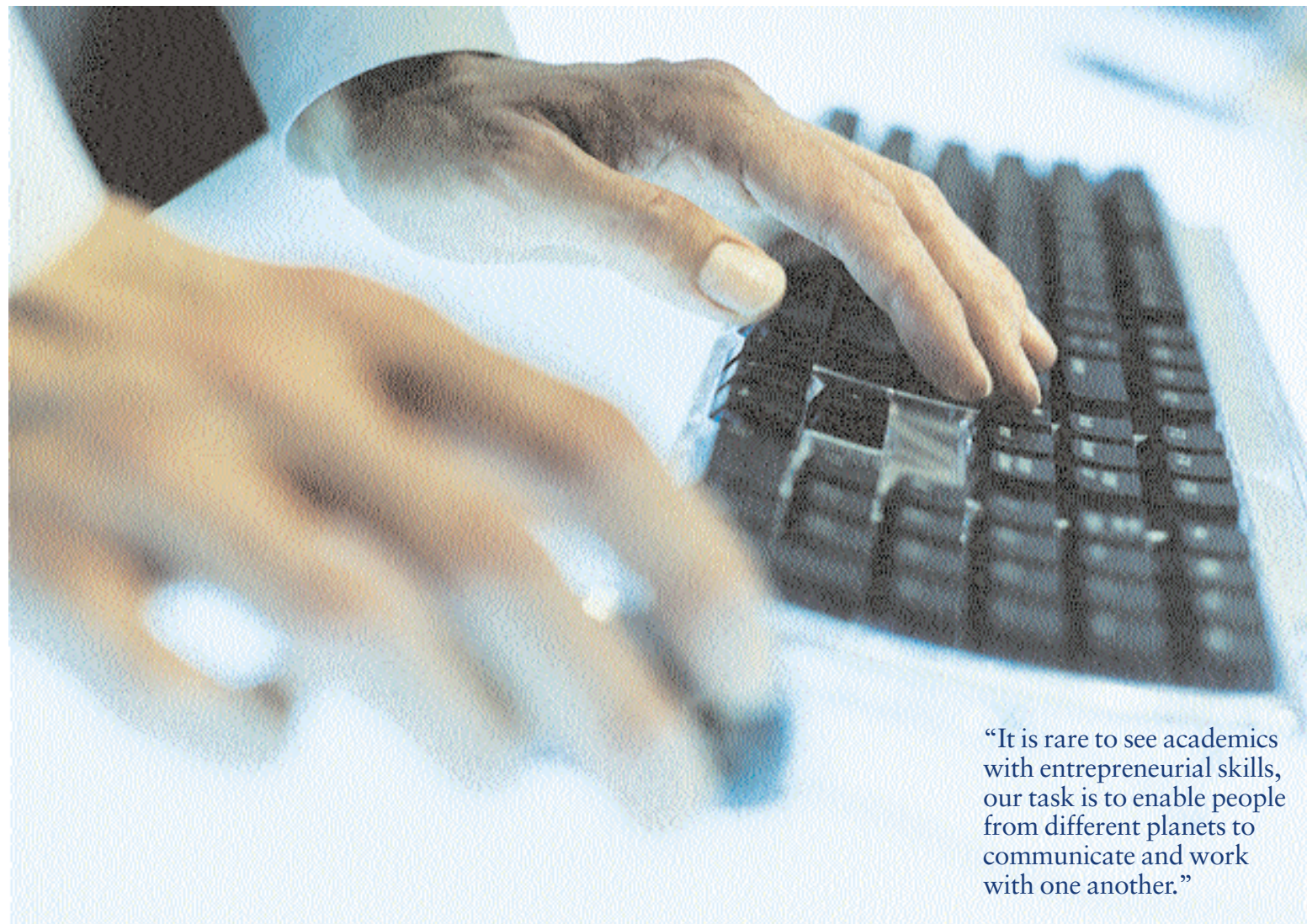


Without trumpets, Oxford – more traditionally associated with dreaming spires than silicon chips – has become one of the world's top centres for high tech. By Peter Snow

High towers, high tech



“It is rare to see academics with entrepreneurial skills, our task is to enable people from different planets to communicate and work with one another.”

Oxfordshire now occupies a unique place in the geography of innovation, says Dr Helen Lawton Smith, director of the Oxford Economic Observatory, an independent research centre set up last year by the city's two universities with backing from local councils and The Oxford Trust.

Numerically, Oxford has leapfrogged Cambridge in the race to develop science-based businesses. The county currently has 2,000 high tech companies, employing some 50,000 people – an astounding one in seven of the local workforce. The corresponding Cambridge figures are 1,357 companies and 40,800 workers

There are now more biotech companies in Oxfordshire than in whole countries such as the Netherlands or Sweden. And the sector continues to boom. Between 1995 and 2000, employment in Oxford high tech companies grew by 40% – twice the rate for high tech businesses in the South East.

Whereas ‘the Cambridge phenomenon’ was rooted in the emergence in the 1960s of a large number of smallish software firms and computer consultancies, Oxford's companies are on average bigger and are continuing to grow. As well as IT, they range across a swathe of ‘new edge’ fields such as biotech, pharimatech, nanotechnology, communications and media. A tenth are in publishing.

There is also a healthy reciprocal relationship between local high tech industry and the county's traditional manufacturing base. This is reflected in the strengths of its new technology enterprises in fields such as instrumentation and motor sport. Oxfordshire is now the epicentre of the UK motorsport industry, with 1,300 people employed in famous companies such as Williams, Lotus and Benetton, and several thousands employed indirectly in supplier firms across the county.

As the distinction blurs between traditional manufacturing and high tech, skills are becoming increasingly transferable.

When Cowley's North Works shut down in the late 1980s – well before Oxford's current mini car boom took off – many former Rover employees were able to find jobs in ‘high tech’ firms like Oxford Instruments and Autotype International.

Why Oxford? The region's boom in high tech owes much, of course, to its good communications, the presence of world-class research institutes like Harwell and Rutherford Appleton and encouragement from The Oxford Trust. But one of the main motors driving Oxfordshire high tech is undoubtedly Oxford University and its research strengths in science. Surveys by the Centre for Business Research show some 29% of local firms interact closely with the University – compared to 19% of firms around Cambridge.

In addition to providing graduates and research scientists for new companies, Oxford University helps drive local high tech in two main ways – science parks and spin-outs. In 2001, ten years after Magdalen College and Prudential established the first Oxford Science Park, the University opened a new science park at Begbroke to exploit the discoveries of Oxford's Materials Department in biomedicine, computers, telecommunications, power generation and the aerospace and automotive industries.

The second way the University gets technology transfer turning is through licences and spin-outs. Oxford has now spun out thirty-nine start-ups worth some £2 billion. Every week it files at least one new patent. The trailblazer was Oxford Instruments, founded by Sir Martin Wood in 1959, which has spawned a whole family of cryogenics firms locally. Oxford Lasers span out in the 1970s, followed by a spate of companies in the 1980s and 1990s, including Oxford Molecular, Oxford Glycosystems, PowderJect, Oxford Biomedica, Nanox and Opsys.

Oxford is unusual in that it takes a very hands-on approach to the intellectual property from its research, retaining a major stake in spin-outs. “The criticism is that we stifle creativity,” says Tim Cook, director of Isis Innovation, the University's intellectual property company. “But the University is not just grabbing intellectual property, it is doing something with it.”

Cook, a shrewd, straight-speaking Yorkshireman who made several millions through the spin-out of Oxford Asymmetry, points to a long row of champagne corks on his window ledge, each of which popped whenever a new

company was successfully spun out: “Three-quarters of these wouldn't have happened if the University had not invested time and effort in them.”

Money is, of course, critical. High tech firms need cash injections at three key stages if they are to grow – during initial ‘incubation’ to explore the practicality of ideas, then equity to start up, and finally investment when (and if) they float publicly.

Licensing offers a possible solution, but, compared to the US, there is a dearth of large UK firms entering into such deals. Scientific entrepreneurs are often forced to develop their own ideas. However the UK venture capital market is still bad at supporting start-ups, as a recent Bank of England report showed. To help academic spin-outs the DTI established the University Challenge Seed Fund in 1999, but, with a ceiling of £250,000 per grant, this is often not enough to carry young high tech enterprises to market.

Oxford University deploys a battery of funds. Drawing heavily on the University Challenge Fund, it is also increasingly ready to put its own money where its mouth is. As recently as 1997 it was only committing £40,000 to technology transfer: that sum, says Cook, has now increased ‘massively’. Isis Innovation has also created the £10.7m Isis College Fund through which individual colleges can provide second-round funding to Oxford start-ups.

Most Oxford funding, however, comes from business angels, and Isis Innovation has managed to congregate and mobilise whole flights of these precious beings, raising potential investment of some £90 million from them so far. Here again Oxford is distinctive: 71% of universities set up their spin-outs without angel capital.

Money is one issue, management another. Entrepreneurial skills are of course the lifeblood of start-ups: “You have to find guys who want to take on a risk,” says Cook. But, as science enterprises develop, their managerial needs change – although those involved may not realise it. It is often asked why so many Cambridge firms have failed to grow. The answer may reflect a lack of the strategic expertise that can transform a one-shot young company into one that is mature and self-renewing. “The challenge for a new company is not birth,” says John Bridgeman, Chair of the Oxford Economic Partnership, “but longevity.” There can be no doubt that SBS and its Oxford Science Enterprise Centre have a vital local role to play. ■



Data courtesy of the Oxfordshire Economic Observatory.