



The Talent Economy, Cities and Science Parks

TOM CANNON

Few issues more vividly illustrate the changing nature of the modern economy than the focus given at a national, regional, corporate and individual level to spotting, developing and attracting talent. In a sense, this is not surprising. We are in the first stage of the Third Industrial Revolution, in which knowledge or at least the talent to combine knowledge with enterprise or entrepreneurship is the main driver of success at least in the more mature economies of Europe, Asia and North America.

Context

Talent, knowledge and enterprise have been an important aspect of economic success since the First Industrial Revolution, that coincided with the end of the eighteenth and beginning of the twentieth century. The key drivers were, however, coal and iron ore – at least access to these tangible raw materials. During the Second Industrial Revolution, oil and steel had the same power. Today's economy is, however, fundamentally different. This not to say access to these raw materials does not matter –an absurd position, at a time of soaring oil prices– but we are increasingly aware that they are finite. Talent, knowledge and enterprise are, in contrast, infinite resources.

In the Third Industrial Revolution, we are ever increasingly aware that raw materials are finite, whereas talent, knowledge and enterprise are infinite resources. More mature economies must compete to spot, develop and attract talent.

This is recognised even in those states and regions with large deposits of the most valuable natural resources. Countries like Abu Dhabi, for example, with vast oil reserves are investing their revenues in massive sovereign wealth funds which are designed specifically to invest in industries, technologies that can secure their future and access talent, knowledge and enterprise. Faced with this challenge, more mature economies must compete to spot, develop and attract talent.

Cities like Barcelona play a crucial role in this competition for talent. In some sense, this is the historic role of cities. They attracted talent, often from their own hinterland, sometimes from further afield. The people who shaped great cities often came from greatest distances. Nathan Rothschild, for example, migrated from his home in Frankfurt, first to Manchester, then to London.

Samuel Cunard crossed the Atlantic to establish his shipping line –Cunard– in Liverpool. The same pattern was seen throughout the nineteenth and twentieth centuries as European and Asian talent, in particular, migrated to North and South America, attracted by the opportunities and challenges in these emerging economies.

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For the cities, city-regions and countries of today the challenge is in some ways the same as in the past, but in other ways significantly different. Part of the difference, of course, lies in the different nature of the world. There are no new frontiers – at least in the geographic sense. The new frontiers are those of ideas, inventions, innovations and markets. cities of ideas –ideopolis– provide a powerful centripetal force to attract this talent.

Ideopolis

The ideopolis is «the place where those who can choose where to work and live, choose to work and live». The city of ideas is first characterized by a set of key physical and economic features; second, a particular social and demographic mix; and third, a specific cultural climate and set of commonly held values. Will Hutton of Britain's Work Foundation recently described the ideopolis as:¹

«A twenty first century metropolitan version of what we first saw in Italian Renaissance city-states. The key elements are the airport, the university and the capacity to create new ideas – either within or outside existing companies – that buoyant demand, intellectual capital and business self confidence help to sustain».

In *The Emerging Democratic Majority*, John Judis and Ruy Teixeira identified the ideopolis with sectors they term as «soft technology», such as «entertainment, media, fashion, design, and advertising», plus business or personal services from retail banking to venture capital, extending beyond corporate consulting to personal mentoring.

They also draw attention to the numbers and importance of 'talent workers' working in such sectors. These are 'white-collar, highly trained, credentialed people such as teachers, engineers, architects, computer analysts, physicians, certified nurses', plus graduates working in new technologies like telecommunications, computing or information technologies and biosciences. Many of these talent workers have invested heavily in their skills and competences, and get their returns through entrepreneurial returns or wage and salary premia.

Crucially, however, Judis and Teixeira also identified that such people were more likely than ever before to come from, or be enthused by, diverse, multicultural urban areas. It is, however, this relationship between their skills and the desire to get the best return from their skills that established that bond between current and future skills and these dynamic, new urban environments. They are «places with a unique buzz, a fizz, a special kind of energy, which will continue to be as magnetic as ever for the production of products and above all the performance of services.»

The US Progressive Policy Institute's 2003 New Economy Report developed this theme further by saying that:

«The most valuable input for many firms is the skills and talent of their workforce, a pool of skilled workers is the most important locational factor. In the old economy workers often followed companies, so attracting companies made more sense. In the New Economy, it's not so simple. As knowledge workers become a more important factor in production, companies often locate where knowledge workers already live. This

means that the old practice of economic development, which focused exclusively on providing help to firms, must give way to a broader approach that includes making a state more attractive to skilled workers by improving quality of life, workforce development systems, and government operations».

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The view is reinforced by the OECD report *Cities: A Challenge for National and Global Economies*, in saying:

«Successful cities attract talented young highly-skilled workers, are centres of innovation and entrepreneurship and are competitive locations for global and regional headquarters. The proximity of universities to research and production facilities means cities are where new products are developed and commercialised. More than 80% of patents are filed in cities».

Just as cities create these environments, they are obliged to compete with increasing vigour for a pool of talent that is increasingly mobile and increasingly aware of its value.

Competition

In its recent report *Competitive Regional Clusters: National Policy Approaches*, the OECD highlighted the extent to which «many nations and regions are struggling to maintain their competitive

edge in the context of globalisation.» In this competition, traditional instruments to attract industries and technologies are increasingly ineffective, while new approaches based on the needs of mobile talent are increasingly important.

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Singapore, once used by the European leaders as a model for economic transformation, is a good example for that. Sanjeev Sanyal, one of Asia's leading financial market economists, points out that:

«There has been growing concern in recent years that Singapore cannot continue to depend on sectors such as electronics and shipping for its future. The decline in the economic importance of South-East Asia since the (Asian Economic) crisis, competition from Chinese manufacturing and Malaysian ports, and the further commoditization of electronics and manufacturing have eroded traditional sources of competitiveness. There is a need for a new growth paradigm».

In New South Wales, Australia, a more familiar language is used to describe both the challenge and the opportunity.

«Newcastle (NSW) is a city in the throes of 'deindustrialisation'. In an embattled regional economy, it is about to lose its founding industry – steel making. Its working class history, unionism, masculinism, and strong community forged through countless economic defeats shapes its image. However, media representations are being complicated by the merging of traditional industrial narratives with the vision of a bright economic future for a re-identified Newcastle metaphorically associated with sporting success, new local aspirations and economic change. In this process, recoverable elements of

Newcastle's industrial place identity were recast, stripped of their problematic connotations, and deployed in furthering the project of reimagining a prosperous future for the city».

The Smart City movement in the USA, for example, has emerged to affirm a belief in the city-regions' future as the dynamic behind regional and national economic competitiveness. Smart growth recognizes connections between development and quality of life. It leverages new growth to improve the community. The features that distinguish smart growth in a community vary from place to place. In general, smart growth invests time, attention, and resources in restoring community and vitality to centre cities and older suburbs.

Competition is the notion that attracting talent has two great advantages for cities, where knowledge and quality of life assets converge. This is especially important to the young, mobile, highly educated and talented entrepreneurial groups who are reshaping economies and markets today.

At the heart of this, new competition is the notion that attracting talent has two great advantages for cities like Barcelona. First, it builds on the historic role of cities as environments to which talent is attracted. Second, it capitalises on the intangible advantages of environment, quality of life, individual aspiration and existing assets that are already concentrated in cities.

These latter range from the university and other knowledge assets to the quality of life assets illustrated by theatres, museums, galleries, retailing, sport and other leisure. These advantages are especially important to the young, mobile, highly educated and talented entrepreneurial groups who are reshaping economies and markets today.

Science and Technology Parks

In the global competition for mobile, well-educated and entrepreneurial talent, science and technology parks like 22@Barcelona, Manchester Science Park and Adlershof Technology and Science Park (Berlin) can be crucial to the success of cities, but only if they learn the lessons of the Third Industrial Revolution, exploiting their real assets and adapting to their new environments.

In some ways, this latter is the most difficult shift in thinking because it challenges much popular, contemporary thinking. The most basic of this is the notion, much espoused by followers of Michael Porter, that industries and technologies cluster. In an early article in the *Harvard Business Review*, Porter argues that:

«The economic map of the world is characterized by clusters: critical masses in one place of linked industries and institutions – from suppliers to universities to government agencies – that enjoy unusual competitive success in a particular field. The most famous examples are found in Silicon Valley and Hollywood, but clusters dot the world's landscape».

Clusters move because they can move and are formed because it makes sense especially if connectivity advantages come into play.

In a subsequent paper, Porter suggests that: «clusters, or geographic concentrations of interconnected companies, are a striking feature of virtually every national, regional, state, and even metropolitan economy, especially in more advanced nations».

This view of competition has emerged to dominate much thinking about economic development but creates a misleading and potentially damaging picture of the process of clustering. If clustering was that powerful, Lancashire in



▲ Science and technology parks can be crucial to the success of cities, but only if they learn the lessons of the Third Industrial Revolution.

England would still be the centre of world cotton trade, but the clustering of talent –especially entrepreneurial talent and knowledge workers– is different.

By emphasising the clustering of industries, firms and technologies, it ignores the far more important process by which talent clusters. In great cities in particular, talent from a range of industries, firms and technologies clusters and alongside it, talent from the artistic, sport and other communities congregates. Equally important, talent is actively tracked globally by ambitious companies, while – for perhaps the first time – it can not only migrate out of a country or region but

can return relatively easily to explore more entrepreneurial opportunities. At the same time, public agencies are following suit. The Mayor of London turned to the top man at the New York Metro to solve his transport problems. Trans-European initiatives see talent from London attracted to Barcelona.

The clustering of talent –especially entrepreneurial talent and knowledge workers– is different. Talent moves because it can move and cluster because it makes sense especially if the connectivity advantages that I mentioned earlier come into play.

London and New York are not monocultures of type most cluster theorists would suggest but incredibly diverse economies with creative scientists, mixing with entrepreneurs, dynamic financiers, innovative communicators enjoying the swirl of ideas this diversity creates. Dig deeper and look closer at Manchester, Barcelona, Sydney, Dubai, Mumbai and Hong Kong and the same diversity exists and creates powerful centripetal forces within which science and technology parks –especially the new generation of inner city parks– can play a key role.

Terman –the creator of, perhaps, the most iconic science and technology park– recognised this when he first understood not only the cost/risk of so many graduates of West Coast universities migrating to the East Coast, but the futility of trying to retain them in traditional labs and economic monocultures.

It is a challenge we should be familiar with in Britain as talent migrates from the North, South, East and West to Greater London despite local cluster strategies and incentives. It is familiar to pretty well every EU accession state as its young and talented migrate to Western Europe. The recent UN report of the movement of people showed the same phenomenon in Latin America, Asia and Africa.

In effect, the report showed that those who can choose where to work and live make choices and then choose places that physically or psychologi-

cally look like a science and technology park – or at least how they ought to look in the future, with the partners they need in the future.

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The conclusion is that not only do we have the certainty that talent will set the pace, but this awareness coincides with greater economic and social uncertainty. Why do we face these uncertainties? In a sense, it is simple. As mentioned above, we are in the middle of a third Industrial Revolution, and just like the first and second, it is changing the world in ways that are both new and familiar. The new are of course the materials and technologies, from iron to steel, from casting to the Bessemer process, from turpentine to oil, from distillation to refineries and beyond. Perhaps surprisingly, it's the familiar that interests us.

We've seen the death of distance. Where once it took months and weeks to move ideas and people, it now takes seconds and hours. Where once frequent travel was the preserve of a few, it's now an airline loyalty scheme.

This does not only mean science and technology parks are key players in the battle for talent but it means extending their roles, nets and networks, accepting that they and their universities must accept that bringing students and graduates in and turning entrepreneurs out is at least as important as articles in the academic literature.

An Accelerating Trend

PTThis needs to be an accelerating trend inside, because it's an accelerating trend outside. Where

universities and science and technology parks are today, is not where they should/will be in the future. Simply because the world is changing.

Recently, Valencia hosted the America's Cup – its total economic impact is around \$10bn. Why is this impact so great? Because of its impacts on local and Spain wide skill and technologies – the very issues at the heart of science and technology park agendas for change. The America's Cup created around it a virtual science and technology park with new ventures based on new material technologies, satellite navigation systems, business services and downstream developments needing university-based science and additional demands for access to wind-tunnels and a host of additional services that spread from Formula 1 to PR. In the process, the event and the city attracted talent from PR and communications through to global satellite positioning.

Diversity and Connectivity

Science and technology parks represent a diverse community. Their diversity is their strength, just as it is their common link to the importance of connectivity that will drive their future.

The new economy is driven by connectivity. This connectivity exists in three forms:

- ▶ Electronic connectivity.
- ▶ Physical connectivity.
- ▶ Psychological connectivity.

And this third is the most important as out of it grow the knowledge, market and creative links that drive the modern economy.

And here, I'm probably going out on even more of a limb. I'd argue that all too often we've put our priorities at the wrong end of the phrase – science and technology park. For too many the park seems to be the priority – not the science and certainly not the technology. It's not that

I dislike parks – they are wonderful places to relax, enjoy yourself, recharge batteries, breath etc. –but they generate enterprise, innovate, open up markets– not since Bridgewater build the first canals have parklands been at the heart of economic progress.

The new economy is driven by connectivity.

Lets be clear: the science and technology park is an heroic concept. It is rooted, I'd argue, in the thinking of heroes like Thomas Edison, the creator of the first electric light, the microphone, the bringer of light to cities and host of other developments. When Edison was asked what was his greatest invention, he said it was Menlo Park – certainly the first industrial research lab and probably the first science and technology park. His radical idea? That if you bring knowledge, research, enterprise and market awareness together, you can change the world. That's still the dream, but now it's global and rooted ever more firmly in cities.

The science and technology park is an heroic concept. If you bring knowledge, research, enterprise and market awareness together, you can change the world. That's still the dream, but now it's global and rooted ever more firmly in cities.

The cities – especially inner cities – are typically where the leading universities – MIT, Imperial College, Tokyo, Hong Kong, Ecole Normale – are based. Major corporations cluster in cities, creating markets where consumers concentrate.

The world's media cluster where political and economic power lies and where electronic and physical communication is easiest.

While the best galleries, museums, night clubs, restaurants and sports teams add spice to the

economic mix, they produce the creative edge that is increasingly inseparable for the science and technology (park) edge.

Little wonder that cities remain not only the starting point for most great, knowledge-based ventures but the environments where their founders return for renewal and to be re-energised.

The science and technology park community is a young one. The average age of all business on European science and technology parks is nine years of trading. The average age of business proprietors is 34.

The overwhelming majority of the most creative companies around the world, whether Hallmark Cards in Kansas City, Nokia in Helsinki, IDEO in Palo Alto, New York and London, Lucas Film in San Francisco or 3M in St Paul, exploit their urban base in ways that mirror the drive of the most entrepreneurial, knowledge-based firms.

The science and technology park community is a young one. The average age of all business on European science and technology parks is nine years of trading (three years less than all businesses). The average age of proprietors of independent science and technology park based businesses is 34 (five years less than all proprietors of independent businesses).

One of the distinct features of cities –as compared to suburbs and rural areas– is youth. The mix of features outlined earlier – concentration of universities, major corporations, global media markets, political and economic power, electronic and physical communication, galleries, museums, night clubs, restaurants and sports teams – attracts the young, mobile and talented. We are not only on the same roller coaster, but in helping companies and communities attract and retain global talent we need to deliver the same centripetal force.

Current science and technology park partners already achieve this, but they need to extend these partnerships to strengthen this centripetal effect.

- ▶ First, through current partners
 - High education
 - Knowledge-based companies
- ▶ Second, new knowledge and cultural partners
 - Museums and galleries
 - Research companies
- ▶ Third, through new partners in connectivity
 - Airports
 - Media
- ▶ Fourth, through new social partners
 - Quality of life: housing, police
- ▶ Fifth, through new economic partners
 - Banks etc.
 - Lifestyle industries etc.

Talent Returners

Nowhere are these task more vividly illustrated than in the challenge of returners. It is surprising just how important, paradoxical and symbolic the issue of returners is for science park development across the world. Who are these returners? In China, they understand them well – they are émigré Chinese who have build successful ventures around the world, whether in the US West Coast or London. By helping them to start new ventures back in China, China can transform its economic base. Where better to encourage them to start these businesses that in science and technology parks?

The same challenge is being recognised in India, Latin America, Eastern Europe and Africa but, on the micro-level, it exists in all countries and cities.

Ireland has shown the way, while Scotland and Wales prepare to follow, as do countries as physically separated as Finland and New Zealand. Cities as diverse as Berlin, Bucharest, Valencia, Naples, Pittsburgh and Liverpool have suffered as their most talented have migrated elsewhere to create wealth and opportunity.

Science parks have a unique potential to tackle the outward migration of talent or, to be more exact, create environments in which entrepreneurial talent that has migrated can return to work in uniquely supportive environments. So far the best examples of this have been in countries like Ireland, Finland and Australasia.

No only does it highlight inequalities in R&D investment, but it brings to the fore importance, challenges and symbolic value the issue of returns, which was exposed most recently in the UN Report on global migration patterns.

Science parks have a unique potential to tackle the outward migration of talent or, to be more exact, create environments in which entrepreneurial talent that has migrated can return to work in uniquely supportive environments. So far the best examples of this have been in countries like Ireland, Finland and Australasia. The Irish economic miracle has been largely driven by this phenomenon, especially through science and technology parks and regions such as those around Shannon and Dublin.

In Finland, Jorma Ollila initially followed the classic migration route of talent from a small, peripheral European country by migrating to a larger, more central European country, but he returned to help create the giant that is Nokia in part because of innovation park type links.

Similar patterns can be seen in Australasia. The greatest opportunities would, however, seem to

exist for those countries in Asia (India, China) and Latin America that have suffered most from outward migration. India has already made considerable progress. The entrepreneurial revolution around Hyderabad and Bangalore has not only former émigrés disproportionately represented (especially among the larger firms) but also clustered in the science and technology parks.

To achieve their potential the roles of science and technology parks need to change strategically, putting these centripetal role in the war for talent at the fore. It is about expanding their capabilities through partnerships based on complementarities and through increasing community returns based fundamentally on the –almost unlimited– productivity of human capital. However, the human capital that matters for companies is not solely or narrowly based on science of technology-based knowledge, where the lead times are long and the returns even longer to achieve.

To achieve their potential science and technology parks need to put their centripetal role in the war for talent at the fore. It is about expanding their capabilities through partnerships based on complementarities and through increasing community returns based fundamentally on the –almost unlimited– productivity of human capital.

Distinctive strategies based not on plant but on partnerships and connectivity are the key. That way leadership can be achieved and the impact for the wider community of companies achieved.

Candidly, scientific leadership without management, marketing, operational and resource leadership simply maximises the risks and risks the venture. Terence Kealey's new book *Sex, Science and Profits* shows how market pull, not science push provides the dominant explanation for the success of technology-based ventures.

Conclusion

Talent-based economics isn't new, but what is different is that it is rapidly becoming the only economics that really matters. Why do I say that? Partly because many of the old barriers to the movement of talent have disappeared.

Talent-based economics is becoming the only economics that really matters. science and technology parks have to be key agents in emerging Ideopolis and in the process of enlarging business, community and economic networks.

Talent works come from every region and nation in the world, but they are not driven just by the search for economic opportunity. Lifestyle is just as important. Cities of ideas – ideopolis – are created not only by great university communities but by excellent communications (physical and electronic), good quality of life (from schools and housing to galleries and sports), a spirit of enterprise (best illustrated by the nature and size of the business stock), outstanding local leadership (private and civic), the quality of the natural and built environment and educational attainment. Little wonder that cities like Barcelona outperform their rivals in most measures of economic growth.

All of these factors affect and are affected by science and technology parks. Few of these key factors are not related to Science and Technology Parks, such as links with the university or access to a great quality of life. Realising this potential requires that science and technology parks change their roles and become key agents in the emerging ideopolis and by doing so widen the networks for companies, communities and economies.

For some countries like China and India in Asia as well as Mexico and Brazil in Latin America, the challenge is as great as the opportunity. In the

USA, the number of Asian-owned NTBFs (New Technology Based Firms) jumped 60.2% to 485,280 from 1992 to 2007. Over this period, this was twice the rate of the increase of all NTBFs in the USA. Little wonder that China, India, Vietnam and other ambitious countries target their expatriates.

Census Bureau data indicate that entrepreneurship among America's Hispanic population is booming. The May 2006 issue of *Hispanic Business* profiles three impressive serial entrepreneurs who have built world-class technology businesses. Among those profiled are Frank Huerta of Recourse Technologies (internet security), Fabian Oliva of Refense Technologies (wireless internet security), and Michael French of Network Architects (network infrastructure). There is growing awareness of not only the cost of losing this talent in Latin America, but of the opportunities from re-engagement.

There is growing awareness of not only the cost of losing this talent but of the opportunities from re-engagement. science and technology parks can be key agents not only in stopping this diaspora but in reversing the trend of talent emigration.

In the UK, cities like Liverpool, Newcastle, Birmingham, Leeds and Sheffield face a massive net loss of talent. Science and technology parks can be key agents not only in stopping this diaspora but in re-defining the relationship between cities, their universities and their communities.

Similar patterns elsewhere, from cities in Latin America, Africa, India and China like Mexico City, Lima, Buenos Aires, Lagos, Cairo, Calcutta, Nanjing to Eastern Europe and the US "rust belt", all see their most talented, potential entrepreneurial graduates and others depart seldom to return. Dynamic cities with their great universities and third generation science and technology parks can reverse these trends, whether in Berlin, Pittsburgh, Mexico City or Nanjing. But this will not happen by accident or

by luck. Strategy, innovation and determination hold the key – as always in the development of science and technology parks.

In this competition, Barcelona and 22@Barcelona have genuine advantages. Today the city tops most rankings as a city of ideas

drawing in talent not just from Spain but across Europe and the world. The challenge, however, is first to embed that advantage and second to compete with cities across Europe from Berlin through Paris to London seeking to retail their own talent while attracting talent currently clustering elsewhere.

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He pioneered work on the third generation of science and technology parks such as 22@Barcelona, where globally mobile talent, university-based research and dynamic urban environments come together.



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Notes

1. Speech to Core Cities Conference, April 2002.