

# Collaborate to Succeed

Stimulating and sustaining economic development in the innovation economy

May 2007

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## **Paper 29**

### **Collaborate to Succeed**

### **Stimulating and sustaining economic development in the innovation economy**

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**May 2007**

## **COLLABORATE TO SUCCEED**

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### **Foreword**

This discussion paper is written from the perspective of over a quarter of a century's involvement in economic development with Scottish Enterprise and the Scottish Development Agency (included a spell as Chief Executive of Scotland Europa in the mid 1990s). It is a deliberately wide ranging reflection on the evolution of economic development theory and practice and some of the lessons learned and insights gained over this period. The views expressed are those of the author.

Charlie Woods  
Scottish Enterprise  
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## **A: Introduction**

The issues facing smaller countries and regions in the early 21<sup>st</sup> Century are becoming ever more challenging with the continued globalisation of economic activity, alongside the growing threat of climate change and the unbalanced distribution of the benefits of globalisation. However, this environment also presents significant economic opportunities as markets evolve and problems demand an innovative response. Understanding the nature of these challenges and opportunities and developing the most appropriate response is at the heart of efforts to promote economic development. This paper examines some of the issues faced by smaller countries and regions and looks at how Scotland's approach to economic development has and is evolving in response.

How well a place copes with economic uncertainties will to a large extent be determined by the actions of individuals and firms. But public policy also has a significant role to play in setting the environment in which individual decisions are played out. A good example of this, from a European Union perspective, is in the development of coherent and reinforcing policies which stimulate the competitiveness of European based firms, build economic and social cohesion and protect the environment.

Over the past decade there has been a growing recognition that policies to promote the economic development of specific places should not be seen simply in terms of the distribution of economic activity and the amelioration of problems brought about by economic change. Rather they can and should be much more about identifying and developing unrealised economic potential. Thus improving overall economic efficiency, while at the same time increasing equity through the development of areas that are under-performing relative to their full potential. In this context regional policy need not be a zero sum game focused on incentives to attract investment that would have happened somewhere else. It can be much more about stimulating more, better and/or faster investment than would otherwise take place.

Somewhat paradoxically while ever more intensive competition is driving global markets, the most successful response to these forces will often be collaborative in nature. This can be on a variety of levels – between individuals, firms, governments, research organisations, public institutions, voluntary organisations, places etc - in a myriad of different combinations in pursuit of many different objectives. It will often take place over different geographies, much will take place at a local level facilitated by the proximity of collaborators, but it can also have an interregional or international dimension.

Intriguingly not only is collaboration often the best response to the challenges of the modern economy, it is also facilitated by the nature of the key asset of the knowledge economy – knowledge itself, which, unlike physical assets, can grow in value as it is used and shared.

## **B: Trends and Challenges**

### **The evolving challenge of globalisation and the 'knowledge economy'**

Globalisation has been a major driver of economic events in recent decades. It has been characterised by trade growing twice as fast as output and direct investment growing twice as fast as trade. In addition there has been an increasing flow of people between places (with some parts of the labour market becoming ever more global in nature) alongside an increasing flow of finance between different economies making the world economy even more interconnected.

This globalisation of economic activity is a double edged sword. On the one hand it opens up the opportunity of new markets and new partners; on the other hand it brings with it new competitors and more intense competition. It is this intensity of competition that drives innovation and improvements in efficiency and productivity, which in turn improves average living standards. But many places, people and firms struggle to adapt to the consequences of this competition. While on average the world is more prosperous, not everyone is.

Globalisation is not a new phenomenon; the period from the industrial revolution to the beginning of the First World War saw a significant growth in flows of trade, investment, people etc between countries. However the scale and pace of change is greater than in previous periods of globalisation. For example, merchandise exports now account for 20% of output compared to 8% in 1913. The emergence of India and China are undoubtedly transforming the nature of the global economy.

The growing contribution of developing countries to the global economy will be one of the most significant features of the coming decades. Their share is estimated to increase from 23% to 31% over the period to 2030. However, it would be a mistake simply to see the emergence of developing countries as sources of low cost production. As the World Bank and OECD have recently highlighted they will be a significant source of 'middle class' consumption (by 2030 it is estimated that the middle class in developing countries will have trebled to 1.2bn people) and innovation (China's expenditure on R&D recently overtook that of Japan).

The increasing globalisation of the economy has coincided with the growth in importance of knowledge and intangibles in the generation of value, as exemplified by the massive strides in technology that have taken place. To paraphrase Alan Greenspan; the value of world output has grown dramatically over the last century, but it still weighs about the same.

Technological advance has both been fuelled by globalisation and helped facilitate globalisation through innovations such as digitisation, the Internet, containerisation, airfreight etc. However, innovation is not restricted to new technology. New business models have evolved at the same time. Some of this has occurred in obvious international markets such as airlines and computers. Yet it has also taken place in what are at first sight much more local services such as coffee shops and hairdressers. Few industries are immune.

These developments have coincided with and helped stimulate the growing sophistication and power of consumers, who are becoming ever more demanding in

terms of what they expect regarding the quality, price and experience of products and services. Producers now have to be even more alive to the importance of differentiating their offering. This is also of relevance to places, both in terms of the attraction of visitors and the attraction and retention of more mobile talent operating within global labour markets.

These trends are all closely related, as is the development of urbanisation. Over half the world's population now live in cities, the number of 'one million plus' cities have quadrupled in the last 40 years, with the number of twelve million plus cities increasing by a factor of ten. This has occurred as the world economy has evolved with economies of scale far outweighing diseconomies, particularly as far as private costs and benefits are concerned. However, the impact of the negative externalities associated with urbanisation on both efficiency and quality of life, particularly in the developing world, should not be underestimated.

### **Globalisation – centrifugal or centripetal?**

Some commentators have felt that globalisation has led to a 'flattening' of the world, particularly in terms of production with the development of global supply chains (Friedman). Others suggest that it is becoming more concentrated or 'spiky', particularly as regards functions such as innovation and HQs with cities like London, Tokyo and New York and the regions that surround them operating more and more at a global level (Florida).

In reality both process are probably in operation, with certain more routine, labour intensive, low skill functions being located to lower cost locations, while higher level, more knowledge intensive activities clustering together. This dispersion of the supply chain is reflected in the 30% of manufacturing trade that is now in parts and components and the 40% of US trade that is within firms.

What are the forces that are helping drive the clustering of the higher level activities? In part it is related to increasing returns to scale and increasing specialism in activities like financial services. This is akin to the national concentrations of industries observed by Marshall in the late 19<sup>th</sup> Century. There also appear to be cumulative processes at work of the type that Myrdal identified in the 1950s. In particular the relationship between proximity and productivity, where firms and people will locate to take advantage of productivity increases that are brought about by being close to others and this creates positive feedback.

This interaction was highlighted by Porter in his analysis of the competitive advantage of nations. In this analysis the growth of industries is driven by the dynamic interplay of a number of attributes (a 'diamond' of factor conditions, related and supporting industries, demand conditions and firm structure, strategy and rivalry – alongside chance and the role of government) to produce a self reinforcing system of development. He sees proximity as being critical to this process:

"Proximity increases the concentration of information....the speed of information flow....raises the visibility of competitive behaviour...leads to an early exposure of imbalances, needs and constraints...Proximity thus elevates the separate influences of the diamond into a true system."

In product and service markets proximity saves transport costs (final and intermediate) and time, which is increasingly important as speed becomes more valuable in many markets. Concentrations of consumers, workers, suppliers etc also intensify competition and hone an ability to compete anywhere. The scale and sophistication of the market also opens up more opportunities for specialist suppliers, further adding to the productivity of an area. These types of proximity effects can be spread over a fairly wide area.

Related to this are human capital effects. It is easier to find the right skills quickly, where 'thick' labour markets make a place attractive to talented workers and provide incentives for workers to invest in skills to take advantage of opportunities. Communication and the sharing of knowledge on both a formal and informal basis between firms and individuals becomes easier. Face to face discussions tend to foster higher trust and with it greater levels of risk taking and quicker decisions. The whole atmosphere or innovative milieu that builds up adds to the productivity of a place. The area in which these human effects are spread tends to be much tighter than the product effects (45 minute journey time).

This is exemplified in Saxenian's study of the development of Silicon Valley, with its fast moving, adaptable culture of enterprise and innovation. The most strategic relationships are often local because of the importance of timeliness and face to face contact for rapid product development. A key part of the Silicon Valley is the specialist support services including venture capitalists, lawyers, marketing, higher education institutions like Stanford and Berkley and the community colleges providing specialist training. Companies and suppliers compete and collaborate to generate a vibrant innovation system spawning new companies and whole new industries. The nature of the collaboration is sometimes formal through licensing and the development of business associations, but often it is very informal, involving the sharing of ideas, equipment in emergencies etc. Saxenian also draws attention to the fact that regional clusters and globalisation somewhat paradoxically seem to go hand in hand as firms reinforce the dynamism of their own area by linking to similar clusters elsewhere.

Alongside the development of a region's human capital systems and culture, transport and infrastructure investment can play a key role in increasing the effective density of an area's population through reducing journey times. Psychological connections are also important in shaping things like travel to work patterns and shopping and entertainment choices as well as helping improve the basis for collaboration between places.

What is the scale of the proximity impact on productivity? It has been estimated that a city of 5 million will be 50% more productive than a town of 50,000 and that the doubling of a city region's working age population would increase productivity by 3.5% (Venables).

The nature of this model is a long way from neo-classical growth models, with their assumptions of constant returns to scale and diminishing returns to factors of production. Under these assumptions the free flow of factors of production and the rapid diffusion of technology would tend to lead to convergence. In a world of more 'cumulative causation' there are fewer self-correcting mechanisms and the historical endowments of assets, institutions, and technology alongside an element of chance

play a big role in helping understand why certain places have become and remain economically strong and others have struggled. This uneven development threatens the cohesion of countries and wider areas like the EU and may well lead to economic potential being overlooked or underestimated in certain circumstances or places having aspirations which may in reality be very difficult to realise.

Uneven development seems to be reflected in the experience of Europe. Although productivity differences between nations have narrowed to some extent over the past 20 years, differences within nations have stayed the same or increased (most of the narrowing of differences between countries appears to have taken place in the upturn in the late 80s). The narrowing of differences in GDP/head has been even less, because of variations in employment rates. There are also big differences between those regions that have increased employment and productivity through technical progress and the adoption of higher value activities etc and those that have improved productivity at the expense of employment, through rationalisation, labour shakeouts etc (Martin et al).

The European Commission notes in its recent progress report on cohesion the concentrations of high levels of R&D in a fairly limited number of regions. 35 regions currently exceed the Lisbon target of 3% of GDP and account for 46% of total R&D in the EU27 (twice their share of GDP). At the other end of the scale in 47 regions R&D is below 0.5% of GDP and accounts for only 0.5% of EU27 R&D (whereas their share of GDP is 3.5%). If there is a strong relationship between R&D and subsequent levels of prosperity, this is indicative of the nature of the development prospects in the future.

This diversity of outcome is also evident from the European Spatial Planning Observatory's mapping work. This graphically demonstrates the regional differences in both performance relative to the Lisbon agenda goals and potential to prosper in a more knowledge based global economy. In general regions towards the north and west of Europe appear to score better on both performance and potential, although there is significant variation within this general trend.

### **What will shape the future – more of the same?**

It appears to be a reasonable working assumption that globalisation will continue to develop both in scale and nature and thus remain the major driver of economic development in the future. But as the Chairman of the Federal Reserve Bank has recently emphasised this shouldn't be taken for granted.

There are a number of forces which will work against this assumption. These include increased security and restrictions on the movement of people in response to global terrorism, pressure for increased trade protection of domestic industries and a social and political backlash as the benefits and costs are felt unequally across different places and groups. The World Bank estimates that the ratio of skilled to unskilled wages will increase in nearly all parts of the world and that while per capita incomes in East Asia will grow from under 20% of high income countries to 35% by 2030, Africa will continue to lag behind at around 5%.

Scenario planning can help us imagine what the future could entail. Shell is one of the foremost developers of this approach. In their recent scenarios to 2025 they model

possible futures driven by three interrelated forces: market incentives, community forces and state coercion and regulation. Using the interplay of these forces they develop three scenarios: 'low trust globalisation', which is a very legalistic world, with lots of checks and controls; 'Flags', which is much more of a localised, fragmented, defensive world; and 'open doors', which is a more trusting voluntary environment built on networks and the sharing of good practice.

Not surprisingly each scenario is estimated to have very different consequences, both quantitative and qualitative. For example, world GDP growth ranges from just under 4% average in 'open doors' to around 2.5% in 'Flags'. The increased growth in 'open doors' is assumed to come from more rapid technological progress from greater cooperation and from more efficient transactions from lower trade barriers. In low trust globalisation, knowledge dissemination is hampered by legal and security issues. Whereas in 'Flags' national barriers impede knowledge, trade and financial flows.

As with all good scenarios each is plausible and what eventually transpires will no doubt involve a combination of all three. What they highlight is that while it makes sense to plan on a set of working assumptions as to what the future might hold, an open mind is needed to adapt to what actually happens. One thing that seems certain is that flexibility and speed of response will be an increasingly valuable asset in the future. This is something which should be to the advantage to smaller places with more manageable networks, which are open minded and well connected to developments elsewhere.

### **The environmental challenge**

One very strong working assumption is that climate change will have an ever more important influence over economic and social development in the future. This will be in part through the impact of increasing average temperatures themselves - the recently published Stern report set out some of the economic consequences and costs of various climate change scenarios. In addition to the actual consequences of climate change the way in which the world goes about trying to reduce and ameliorate the impact of man made CO<sub>2</sub> on climate will also have a significant impact.

In many respects the response to climate change poses a threat to traditional economic development processes. Trade-offs will undoubtedly have to be made between growth and protecting the environment to reduce carbon emissions. However, it could also have a much more positive effect. Reducing our carbon footprint means reducing production inputs. In addition to having a positive environmental impact this will also make production more efficient and increase productivity. The challenge of responding to climate change will also be a major stimulus to R&D and innovation as new, more efficient ways are sought to produce, store and use energy and more efficient and effective ways are sought to reduce the need to travel as much to do business globally.

In other words responding to climate change can be seen as an agenda of increasing productivity and improving innovation. Looked at this way it offers significant opportunities to firms and places. Indeed the last two years have been something of a turning point as more and more major corporations realise that regardless of the arguments over whether or how fast climate change is happening, there is money to be

made in responding positively to the opportunities thrown up. This was possibly best exemplified by General Electric with its 'ecomagination' campaign:

"Ecomagination is GE's commitment to address challenges such as the need for cleaner, more efficient sources of energy, reduced emissions and abundant sources of clean water. And we plan to make money doing it. Increasingly for business, "green" is green." (Jeff Immelt)

The importance of this agenda to business is now reflected in all the major business schools and their journals (see Lash and Wellington in the Harvard Business Review).

Not only is business recognising the opportunities offered by this new market it is also increasingly aware of the positive side effects of a more environmentally aware approach. These cover the impact on consumers (brand value), employees (and potential employees in a more competitive labour market), reduced compliance costs, shareholders (risk management, cost of capital) and other stakeholders such as governments. This more positive approach of business will be further stimulated by the use of market mechanisms, such as carbon trading, to respond to the challenge of climate change.

In many respects it is easier for firms to react quickly where they see business benefits. Governments are often more cautious. Given that climate change is a genuinely global phenomenon, which needs a global response to have any real impact, there is a real concern of free rider threats to competitiveness if others are not as assiduous in tackling the issue. Having said that, it seems there is an increasing recognition that delay is not really an option - witness the efforts of a number of individual States in the US to go faster than the Federal Government.

The nature of the knowledge economy is also playing an important part in the process. The degree of knowledge that is widely available and its speed of dissemination mean that more and more people are aware of the potential consequences and are putting pressure on governments, producers and employers. In an increasingly information rich world ignorance is no defence.

Business will also better appreciate the role it can play in sustainable development if a broader understanding of what constitutes capital assets is developed. Firms generally have a good appreciation of financial capital and the need to avoid its consumption. If this approach is applied to a wider concept of capital known as the five capitals model (financial, natural, human, social and manufactured capital - see Porritt) then these other elements will be viewed less as a free good which can be consumed at will.

The right relationship between government, consumers and business can help generate a virtuous cycle in response to climate change and other environmental issues. Sustainable consumption leads to sustainable production and policies and a sustainable global business environment leads to business innovating to increase its resource productivity and develop new more carbon friendly products and services, which in turn generates more demand etc.

## The importance of innovation

Innovation is central to both environmental and economic development. Not least through the impact it has on productivity, as Paul Krugman succinctly put it:

“Productivity isn’t everything, but in the long run it is almost everything. A country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.”

While productivity is driven by a number of factors (The UK’s Treasury highlights enterprise, skills, investment, competition and innovation), innovation plays a particularly important part in the mix. Paul Romer characterises it as the ‘pump of growth’ that has driven a tenfold increase in output and living standards in the US and Europe in the last 130 years.

Innovation is not simply about scientific and technological advance; it is the combination of these breakthroughs with the problem solving disciplines of the marketplace to convert them to new products and services. This is not a linear process but the marrying of two processes that exist side by side and are driven by different motives, yet which feed off each other with positive feedback loops that lead to better science and better products and services. This emphasises the importance of a systems approach to understanding innovation processes.

Innovation also has a direct impact on the quality of life. In general major disruptive innovations have enabled a larger population of less skilled or less wealthy people to do things in a more convenient, lower cost setting, which historically could only be done by specialists in less convenient, higher cost settings (Christensen).

There is a fairly broad consensus that public policy can have a key role in influencing innovation. As Pedro Solbes the Deputy Prime Minister of Spain and Chair of the 2007 OECD Ministerial Council pointed out in advance of the recent Council meeting in Paris:

“Economic theory increasingly stresses the importance of innovation as a driver of growth.... Innovation contributes to boosting per capita income, not only through its direct effect on welfare, but also through its indirect effects - innovation deepens the knowledge pool, which in turn facilitates further advances and welfare improvements. Its notable positive spin-off effects on growth make innovation one of the few areas where there is general agreement on the necessity of public action.”

While technological advance is a key part of the innovation process, it is not the only element, particularly in service industries. A recent report by NESTA (the National Endowment for Science, Technology and the Arts) in the UK has highlighted wider forms of innovation such as new business model development. It has also recommended that comparisons between countries and regions regarding business R&D investment should reflect differences in the sectoral make up of different places. Some sectors undertake less traditionally defined R&D yet are still very innovative. This is particularly the case in service industries. For example, it is only recently that an attempt has been made to estimate R&D by financial service companies in the UK. It is estimated that RBS invests over £300m a year on R&D. This is the equivalent of more

than half of the traditional measure of BERD (Business Enterprise Research & Development) in Scotland (albeit RBS R&D includes that undertaken outside Scotland).

There is also a lot of innovation taking place in innovation processes themselves, which offer economic development opportunities. For example, less R&D is being done in-house by larger companies, with more contracting out taking place to contract research companies and universities. In addition to more contracting out, larger firms are also acquiring the benefits of R&D investment through the purchase of smaller firms that have developed valuable intellectual property that the larger firms can more easily commercialise. As the Economist recently put it "Pharmaceutical companies are mining the small biotech companies for valuable product candidates."

In many respects this reduced reliance on in-house R&D reflects the nature of the innovation process with wider 'social' benefits from R&D being substantially greater than the private benefits to the firm making investment (Griffith). The scale of these external benefits is also the main justification for public investment to stimulate innovation investment that might not otherwise take place or would happen slower or to a lower quality.

These wider spill-over benefits link back to the earlier discussion of the cumulative processes driving the development of different places. Innovation systems are often localised with some close local networks, based upon face to face relationships, facilitating the transfer of knowledge. This transfer is often informal and involves the exchange of tacit knowledge between participants in the network. Important knowledge conduits also build up between localised systems (often via academic relationships). However, it is more likely that transfer of knowledge between systems will be via more formal routes such as licensing and other means of capturing and trading intellectual property.

## **The challenge for smaller countries and regions**

Given these trends in global development, three broad challenges can be identified for smaller countries and regions:

1. To make the most of their assets and markets in order to build as much critical mass as possible. This will give them the chance of generating innovation systems of sufficient scale to be of global significance, albeit often in niche markets, while also allowing an element of diversity to avoid overdependence on one activity in an increasingly uncertain world.
2. Regardless of efforts to build critical mass in a particular area, the very scale of global markets mean that it is also very likely that they will have to draw on resources elsewhere to augment domestic capability. This could include partners, talent, ideas and finance. So connecting to global innovation centres will be an essential part of any development strategy.
3. All this will have to be played out against a background of a reducing carbon footprint – not easy when trying to build and maintain global connections. Thus further emphasising the need for innovative solutions.

Successfully addressing these challenges looks likely to require more effective collaboration at a number of levels both within and between places.

## C: Collaboration

### The natural way of things?

Formal and informal collaboration is vital to the development of vibrant innovation systems. Intriguingly the development of an economy that is based on making the most of an increasing abundance of knowledge may be more akin to the environment in which humans first evolved, when collaboration was more the norm.

Anthropologist William Ury postulates that as humans evolved it was cooperation in hunter-gatherer societies that was at the heart of our ability to survive against more powerful species. Food and shelter was relatively abundant in this environment and cooperation proved the most effective way of prospering. Greater conflict grew out of more stable agricultural settlements and the defence and acquisition of land and other resources (including other humans). As populations grew resources became more constrained and survival became more of a zero sum game, where power gave you the ability to acquire a greater share of resources.

In this environment war became the most effective way of resolving conflict. There are signs that this is becoming much less the case as greater productivity has reduced scarcity, the benefits of trade have become better appreciated, greater cultural and personal links have grown up and communication has improved. Alongside this the returns to aggression have fallen from evens to 1:5 as defences (often cooperative) have improved. The example of Europe itself in the last fifty years is an encouraging one.

Ury argues that as value in the economy is generated more through the discovery and application of knowledge rather than from physical inputs, which are fixed, our economic environment is more akin to the environment of our hunter gatherer ancestors. The act of cooperation in itself can add value as knowledge shared tends to grow, not simply be consumed.

“It is hard to distinguish between temporary fluctuations and long term trends. Nevertheless let me offer my educated hunch. Humanity is returning to dependence on a basic resource that is, as in hunter-gatherer times, an expandable pie. We are returning to the horizontal relationships that existed among human beings for most of human evolution....The knowledge revolution thus offers us perhaps the most promising opportunity in ten thousand years to create a co-culture of coexistence, cooperation and constructive conflict.”

Alongside this positive perspective of the potential of a more knowledge based economy, we shouldn't forget that there will still be many physical factors that are likely to be increasingly constrained in the future as a result of further development and climate change e.g. water supplies. However, collaboration may also hold out the best chance of success in resolving many of these challenges in a sustainable way.

The changing nature of many business processes reflects a move towards greater collaboration. Negotiation with colleagues within and between organisations to pull together resources and make the most of them is becoming an increasing feature of the modern workplace. This chimes with the recommendations of the Beyond Budgeting Round Table about the type of organisation that will thrive in the 'innovation

age'. They argue that in a world where innovation and fast response are critical success factors, organisations need to be seen less as command and control machines and more as living, learning organic systems in which much more decision making is devolved and where the organisation collaborates to a much greater extent with external partners up and down demand and supply chains (Hope).

In many ways the possibilities of this environment are graphically illustrated by the iterated format of the 'Prisoners Dilemma' game, in which cooperation between players yields the optimal result in terms of individual and overall outcomes. Yet the game also demonstrates how fragile collaboration can be and how easily fear and loss of trust can trigger conflict, which feeds on itself. (Axelrod)

An analysis of the strengths and weaknesses of small countries and regions often begins with the undoubted problems posed by insufficiently large domestic markets to provide the basis for developing firms and industries. However, in a world where a greater premium is placed on collaboration their size conveys the advantage of relatively small networks of players in which to generate the communication and trust, which is the foundation of greater collaboration and alignment.

In a world where the pace of change is getting ever faster this could be a considerable advantage. This certainly seems to be the case in the corporate world where it is often the smaller, more agile competitors that are best placed to introduce the disruptive innovations that transform markets. To make the most of this opportunity smaller countries and regions must avoid over fragmentation of effort, remain open minded, well connected and be willing to take calculated risks.

### **Why collaborate?**

How can a more collaborative approach add value? The development of the popular Dilbert cartoon series provides a graphic example. The hardest part of the production process used to be the generation of plots until creator Scott Adams included his email address on the cartoon. After that he was flooded with real life story lines from his readers, which he then used as the basis for the cartoon strip. Not only did it reduce his input, it also gave readers what they wanted – a realistic mirror of their own experiences and thus increased demand.

The internet is increasingly the medium where much collaboration is played out, transforming business models and value chains as consumers get more and more involved in the production process, e.g. You Tube, Wikipedia, Linux, online booking, online design and customisation of products etc.

It's not just about consumer/producer collaboration. The Economist Intelligence Unit recently published a report into inter-firm collaboration drawing upon a survey of senior executives based in the UK. It found that collaboration is now an increasingly important part of developing competitive advantage for nearly all businesses (only 5% don't), typically involving up to ten partners (although some have more than 100). Almost 80% expect the number to increase in the near future.

Most collaboration is in the area of sales and marketing; other areas include supply chains, R&D and finance. The biggest difficulties involve finding suitable partners

(dangers of reputational risk), avoiding cultural clashes, dealing with intellectual property and sorting out practical problems (IT systems etc). Perhaps not surprisingly the right people skills are seen as critical for success.

“Having good personal relationships, having people who see the broader picture, who seek to understand your business and have some empathy for you really helps make alliances strong” ... “With trust and cooperation almost anything is possible.” (EIU)

### **What can be gained from greater collaboration?**

- Access to new geographical markets, particularly in developing countries.
- Wider access to product service markets with complementary products e.g. Apple and Nike working together to target runners, Douwe Egberts and Phillips collaborating to co-brand coffee and coffee makers.
- Increased speed to market.
- Shared risk.
- Fresh ideas and perspectives to research and development – often at the margins between different sectors.
- Access to finance.
- Scale and critical mass in global markets.
- Greater diversity.
- Increased efficiency.

Collaboration is not just a business phenomenon. Greater collaboration can help achieve greater efficiency and effectiveness in the delivery of public policy. In economic development terms this has relevance for just about every facet of the business including, business development, education and skills, research, international marketing, planning, infrastructure, transport etc. Effective collaboration is not about everyone trying to do each others jobs or second guessing what's being done, it's about trying to ensure the specific actions of different parties are more closely aligned in pursuit of shared objectives.

This sort of alignment and cooperation appears to have been a critical part of Ireland's rapid development in recent decades and the development of a vibrant innovation system in Finland. It seems that it is often a crisis or an external threat that is the stimulus to this sort of behaviour. The challenge for places that are not in this position is to engender the spirit of crisis without having to engineer one.

Academic collaboration is also important, for example in the articulation between school, vocational training, college and university; in the pooling of research between universities to build critical mass; in international links between researchers (often a key component in connecting regional innovation systems); and in the exchange of students between countries. There is increasing evidence of international collaboration between universities to share faculty members and penetrate wider markets, to share technology and improve student experience. Examples of this from Scotland with a specific economic development connection would include the links between Edinburgh and Stanford universities and the EDGE Programme (stimulating enterprise amongst students while offering practical advice to businesses) involving Columbia, Glasgow and Glasgow Caledonian universities.

Places can also benefit from greater collaboration between each other. For example, to build scale in product and service markets; to develop new transport hubs; to build thicker labour markets that attract and retain talent; and to develop more attractive and complementary amenities. Most of these activities will take place between adjacent areas. There is increasing evidence of this taking place within countries, with projects such as the Glasgow-Edinburgh collaboration or the 'Northern Way' in the north of England. It is also happening across national borders e.g. the Oresund region collaboration covering parts of Denmark and Sweden.

There are also benefits to be gained by wider geographical collaboration between non-adjacent regions. These include the sharing of fresh ideas and perspectives on intractable problems and the sharing of good practice and cultural exchange to add to the diversity of areas and the perception of citizens. These international collaborations often benefit from a focus on a particular set of issues or interests. The European Union has played a critical role in stimulating such collaboration through initiatives such as the Erasmus and Framework Programmes.

There are many more important areas where collaboration will be critical. Perhaps the one that has received greatest attention in economic development circles in recent years is that of university industry links in building self-reinforcing innovation systems (Lambert Review). This sort of collaboration can help increase the quality and relevance of education and research and aid the transfer of knowledge between universities and firms. While it is very much a two way process, greatest interest has recently been focused on trying to commercialise the output of research undertaken in a region to the benefit of the region.

The possibilities of greater collaboration between and within sectors and between and within places to add value are almost endless, constrained only by our imagination. Exploring these possibilities should be at the forefront of economic development in the future. A recent example from Scotland serves to illustrate where hidden potential can lie. The case involves collaboration between a major US pharmaceutical company (Wyeth), four universities (Edinburgh, Dundee, Glasgow and Aberdeen) with complementary research strengths and the National Health Service (facilitated by Scottish Enterprise with investment, knowledge and connections). Together they are collaborating to speed up the process of drug discovery and its translation into commercial products. One of the critical parts of this collaboration is the value of the scale and nature of the NHS patient database to the process – something that would not have appeared on any traditional assessment of Scotland's economic strengths.

## **D: Scottish Experience**

### **The role of a development agency**

It has long been recognised that development agencies can achieve little on their own. They must aim to work in close collaboration with partners in the public and private sector to be a catalyst for change. This will cover a wide range of activities from major projects to stimulate 'step change' at one end of the spectrum to support for firms and individuals to build the capacity to be able to adapt to change at the other.

The major tool at a development agency's disposal has traditionally been finance on appropriate terms to make things happen and to a large extent this is still the case. However, the total resources available will always be limited; in the case of Scottish Enterprise well below 5% of total investment in the economy. Knowledge and connections are a growing part of the mix, which are being used to add more value to the financial input. This will often involve acting as an honest broker to help bring parties together to achieve mutual benefits through cooperation.

Looking back, the last 25 years or so of economic development history in Scotland would seem to be characterised less by distinct approaches involving major changes in strategy and direction and more by the evolution of a number of themes and approaches over time. This adaptation has been driven by the lessons of experience, the views of customers and partners and changes in the market place. Many of these themes have been brought together to focus on the particular needs and opportunities of specific industries (e.g. electronics in the late 80s, life sciences today) and areas (from SDA regional offices and area initiatives to metropolitan planning today).

The evolution of policies and programmes over the period has included:

- Less direct provision of venture capital as a more vibrant private sector in Scotland emerged, although new co-investment models have been developed recently to address gaps that have emerged in the market.
- Less direct investment in industrial property as the market in Scotland developed, although involvement in more specialist provision for certain industries is still required. Methods of intervention have also evolved to include more joint venturing.
- A move away from deficit funding models more generally to greater sharing of risk and reward.
- A significant increase in efforts to realise the commercial potential of the research base and to stimulate innovation to develop more sustainable domestic sources of technical progress.
- Less attention on high volume FDI to support major (and urgent) industrial restructuring and more emphasis on higher value inward investment to support the development of a more knowledge based economy (R&D, HQ functions).
- A broadening of international activity to include JVs and strategic alliances alongside export promotion.
- A growing appreciation of the role that cultural and behavioural change can play e.g. in trying to build more enterprising attitudes.
- A growing recognition of the role of attracting and retaining talented people.
- More emphasis on vocational training in employment.
- Greater attention to linking the employment opportunities generated by major infrastructure projects to disadvantaged areas and groups.

- An emerging interest in the contribution of development in the early years of childhood to breaking out of vicious spirals of decline in certain areas and to developing the 'core skills' increasingly demanded by employers.
- A flexible response to emerging opportunities such as e-business – although the nature of this involvement has already adapted from stimulating awareness to being a mainstream part of business development in the knowledge economy.

Are there any overall conclusions that can be drawn from this experience? Perhaps the most striking is that because a modern economy is a complex system any attempt to develop it requires a coherent, joined up response on a number of fronts, including the stimulation of enterprise, innovation, internationalisation, and skills etc, integrated together for maximum effect. After a lot of searching there doesn't seem to be a 'silver bullet'.

A clear strategy that integrates the various influences on development is therefore vital, but it is also important to remain flexible and never underestimate the role of chance. The history of many industries, particularly in terms of how they relate to a particular place, is littered with fortuitous occurrences. Therefore we shouldn't be too blinkered in pursuit of a particular strategy. We should expect the unexpected and if good fortune does present itself, make the most of it. While it might appear to be a contradiction in terms, the best approach may well involve an element of 'strategic opportunism'.

## **Recent developments**

In terms of strategy a lot of attention has been focussed on developing more coherent approaches to integrate action across Scotland. The overarching strategy is set out in a 'Framework for Economic Development' with a specific enterprise strategy (Smart, Successful Scotland) to guide Scottish Enterprise and its sister organisation Highlands and Islands Enterprise and their partners.

Within the overall direction of Smart, Successful Scotland, Scottish Enterprise has developed a number of specific approaches in recent years to identify and develop unrealised economic potential in a more joined up way, both within the organisation and with partners. These approaches cover:

- Priority industries
- Metropolitan Scotland
- Intervention Frameworks

As well as trying to develop coherent frameworks in their own right for each, significant effort has also been put into integrating the three dimensions.

### ***Priority Industries***

The priority industry approach starts by articulating demand from industries in which Scotland has existing or emerging strength. These industries include financial services (already a very strong part of the economy), life sciences, (a lot of potential based largely on research strengths) and energy (strong in oil and gas and with a lot of potential in renewables, power networks etc.)

This approach should not be seen as 'picking winners' in a traditional sense, it is about better understanding from the perspective of the industry where potential exists and how investment can best be made in a mutually reinforcing way alongside partners to build a strong innovation system, which realises this potential and generates additional value.

The example of life sciences highlights the types of investment streams that are woven together collaboratively within this approach. They include:

- 'Enterprise Fellowships' to stimulate enterprise among academics.
- 'Proof of Concept' funding to speed up the commercialisation of university research (over 30% focussed on life sciences).
- A Life Sciences 'Intermediary Technology Institute' to build a greater understanding of market potential and commission more market led business R&D investment (not to do the research itself).
- Targeted start up advice and support for companies with high growth potential.
- Investment incentives for innovation investment (R&D plus).
- Venture capital investment alongside private sector investors.
- Specialist property provision (including the first joint venture outside the US with a major specialist in property provision and commercialisation support, alongside a leading university and a major teaching hospital).
- The attraction of key academics (alongside Scottish Funding Council initiatives to 'pool' research activities across Scottish universities).
- A focussed effort to build Scotland's overseas image e.g. the development of the BioQuarter concept for Edinburgh and it's launch at the major US life sciences conference and exhibition.
- Support for the development of exports and overseas joint ventures building on a network of overseas Scots (Globalscot).
- The attraction of key skills from out-with Scotland via the 'Talent Scotland' initiative.
- The development of a consortium of colleges to develop and deliver a curriculum aimed at filling a potential shortfall in lab technicians.

### ***Metropolitan Scotland***

There is a strong relationship between the priority industry and 'metropolitan Scotland' approach, which aims to bring more coherence to the planning and delivery of programmes across a network of Local Enterprise Companies covering lowland Scotland, particularly in response to meeting demands of the priority industries. This network has been in operation in Scotland since 1991 and is one of the key features of Scottish Enterprise. It is designed to respond to and stimulate local needs and opportunities within the framework of national strategies such as 'Smart, Successful Scotland'.

Local areas have also provided the basis for an extensive level of interagency planning and implementation via a system of 'Community Planning' led by local government, which aims to integrate activity on a more coherent basis across a range of functions in a particular geographic area.

Metropolitan planning and delivery is about building scale and mutually reinforcing connections between projects and programmes in different local areas. A good example of this is the major regeneration programmes along the banks of the River Clyde in Glasgow and further downstream. It is also about trying to strengthen the links between metropolitan regions to make the whole add up to more than the sum of the parts.

While this approach is focused to a certain extent on the cities that form the core of metropolitan areas it recognises the symbiotic relationship between cities and their surrounding areas. "A region will be successful if its cities are successful and cities will flourish if the wider region flourishes." (European Commission)

There has been a growing recognition of the way in which different places interact to increase the impact of different initiatives. For example, a network of mountain bike centres ('The 7Stanes') has been established in recent years throughout southern Scotland, through the collaboration of a number of partners including the Forestry Commission, local government, Visit Scotland, Scottish Enterprise and the European Union. When it was started it was seen very much as a rural development initiative. Yet as the sport has become more popular and as the 7Stanes have become recognised as one of the premier locations worldwide, it can now be viewed as an important metropolitan project helping attract talent to the urban centres of central Scotland. This is a further example of the need for an open mind in understanding that unrealised economic potential can take many forms.

### ***Intervention frameworks***

'Intervention frameworks' and 'product pipelines' are aimed at specific issues such as innovation and the commercialisation of research to ensure all aspects of an issue are adequately covered in a systematic way and avoid confusing customers. They have been deployed alongside a system of account and client management, which aims to identify the companies that have the potential to have a disproportionate, additional impact on the economy and tailor support to realise this potential.

### ***Measuring progress***

Progress measurement has grown in significance as stakeholders have demanded a clearer understanding of returns on economic development investment. In Scotland there is now a much clearer framework to link inputs and final impact via outputs and outcomes achieved, using a whole range of techniques from efficiency measures, in year outputs, customer surveys, strategic programme evaluation, specific project evaluation, macro modelling, interregional and international benchmarking.

The benchmarking work is overseen by a 'Joint Performance Team', comprising officials from the Scottish Executive, Scottish Enterprise and Highlands and Islands Enterprise, who publish an annual report on progress. The approach includes using a range of indicators to compare progress with OECD countries and other parts of the UK and trends since 1999.

The framework includes measures that provide a guide to overall progress (GDP/head, CO2 emissions, employment rate and productivity) along with specific measures for each objective of 'Smart, Successful Scotland'. The aspiration is to match top quartile

OECD performance. In the latest report Scotland was towards the bottom of the second quartile for GDP/head and productivity, in the first quartile for employment and in the third quartile for CO2 emissions. Positive progress against the OECD top quartile average had been made in all four measures since 1999. The mid level performance in productivity is reflected in the more specific measures in the framework, for example, business R&D investment is in the third quartile and has show no relative improvement over the period.

In addition to being an indicator of progress, benchmarking is also used to guide future investment. For example over the last five years the balance of Scottish Enterprise investment on 'growing business' has increased from a quarter to a third of its operational expenditure. Most of this increase has related to increased investment in innovation initiatives aimed at improving levels of business R&D investment.

This is still an area that is fraught with difficulty, which no one has really mastered, as a recent Audit Scotland report on performance management in Scottish Enterprise pointed out.

"Measuring the impact of an economic development agency is complex and there is no easy way to assess the impact of its investment on overall economic performance. Similar agencies throughout the world also struggle with these issues..." (Audit Scotland)

Problems relate to a number of factors, including the difficulty of unambiguous attribution (something that could get even more clouded in a world of greater collaboration) and establishing a counterfactual scenario. Regardless of the difficulties this will undoubtedly be an area of increasing attention in the future as governments strive to maximise value for money.

## **E: Conclusions**

In an ever more global economy, where greater attention is being paid to achieving genuinely sustainable development, increased productivity and innovation will be more and more important to individuals, firms, specific places. Ever more intense competition will remain a driving force in stimulating these improvements. Yet greater collaboration will be essential to respond effectively to this stimulant, not least because it will allow the speed and flexibility of response to the increasing number of possibilities that are likely to emerge. As a result of processes involving vicious and virtuous circles development is likely to remain unbalanced and certain people and places will not realise their full potential without support.

Against this background publicly funded economic development should remain focussed on identifying and realising unfulfilled potential, with development agencies acting as catalysts to stimulate investment to ensure outcomes that would not have happened, or would have happened more slowly or to a lower quality. Success will be increasingly dependent on genuine partnerships. The stronger the collaboration and the closer the alignment of investment within a particular place the greater chance of success. If smaller countries and regions build on the advantages they have in securing greater collaboration they should be well placed to make the most of a fast moving, innovative world.

In Scotland we have begun to develop approaches, which aim to reflect this analysis, but we recognise that we undoubtedly have much more to learn from the experience of others to improve the effectiveness of our economic development investment.

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