

Towards an Inclusive, Knowledge-Based Economy:

Some experiences and challenges from a
European regional perspective

July 2000

Ewan Mearns, Scottish Enterprise



Scotland Europa
Scotland Europa
Scotland House
Rond Point Schuman 6
B 1040 Brussels

Tel: +32.(0)2.282.8315

Fax: +32.(0)2.282.8300

E-mail: john.edward@scotent.co.uk

Website: www.scotlandeuropa.com

Paper 19
July 2000

**Towards an inclusive, knowledge-based economy:
Some experiences and challenges from
a European regional perspective**

Ewan Mearns, Scottish Enterprise

Manager, Knowledge Management, Scottish Enterprise Network
123 Bothwell Street, Glasgow, G2 7JP, Scotland-UK

With the co-operation of



REGIONE DEL VENETO
Sede di Rappresentanza di Bruxelles



THE SCOTLAND EUROPA PAPERS

The Scotland Europa Papers are a series of occasional papers which have two objectives:

- “ to make a Scottish contribution to key issues that will affect the development of the European Union;
- “ to promote a wider understanding of European issues in Scotland.

The Scotland Europa Papers are intended to provide a forum for interested parties in Scotland and other European countries and regions to promote ideas and perspectives on issues that are of importance to the development of Scotland and the EU. The papers will be given wide circulation. We welcome contributions to the series.

The views expressed in the Scotland Europa Papers are those of the authors and do not necessarily represent the views of Scotland Europa or its members and partners.

We would be very pleased to have your views on any of the ideas raised in the papers or for you to arrange to receive further papers in the series. Please contact:

John Edward
EU Policy Advisor
Scotland Europa
Scotland House
B-1040 Brussels
Tel: +32.(0)2.282.8315
Fax: +32.(0)2.282.8300
e-mail: john.edward@scotent.co.uk
web: www.scotlandeuropa.com

We look forward to hearing from you.

Contents

	Page
Introduction	6
The emergence of the knowledge-based economy – retracing the steps	7
(a) The transformation of manufacturing industries	11
(b) New and different service industries	13
(c) Satisfying customer demands	14
(d) Business relationships and values	17
Implications of the knowledge-based economy for :	
(i) Improving social cohesion	20
(ii) Organisational development and new business models	24
(iii) Governance and governmental structures	26
Conclusions	32
References	33

Introduction

Politicians, business theorists and researchers have for some years now been grappling to find ways of explaining the economic changes happening all around them. Such labels as “the information society”, “the new economy” and the “knowledge-based economy” are used to attempt to describe ways in which the increasing accumulation and application of knowledge is used to add value to products and services. Whatever you choose to call it – and we shall in this paper refer to the knowledge-based economy – its effects are very real and tangible, and are taking shape on a global stage.

One of the key challenges for the European Union, however, is to ensure that Europe is not only maintaining but increasing its competitiveness within the knowledge-based economy. The USA in particular is generally recognised to be the pace-setter against which all other competitors’ performance is judged. How can Europe catch up and effectively compete with its key trading partners in the critical areas of future economic and technological strength ?

But perhaps the challenge for Europe is rather broader than this. Not only must we win through in purely economic and technological terms but we also need to do this in a way which actively promotes social cohesion. In short, the challenge is also to ensure that the European social model can be modernised and successfully survive the transition to the knowledge economy.

This paper aims to shed some light on these questions, complementing and widening the debate sparked by the recent Portuguese Presidency and developed during the Lisbon European Council meeting in March 2000. In particular, the paper focuses on the implications of pursuing an inclusive, knowledge-based economy for European regions. Some experiences and challenges are jointly posed by Scotland, North Karelia (East Finland), members of Scotland Europa and the Veneto Region.

The first section briefly describes some of the key characteristics of the knowledge economy as seen through the eyes of businesses and their customers. The second focuses in more detail on some implications of this new economy upon social cohesion, organisational structures and processes and, finally, the ability of Government at different levels to intervene to shape future change. The concluding section ties some of these threads together to answer the focal questions posed by the paper.

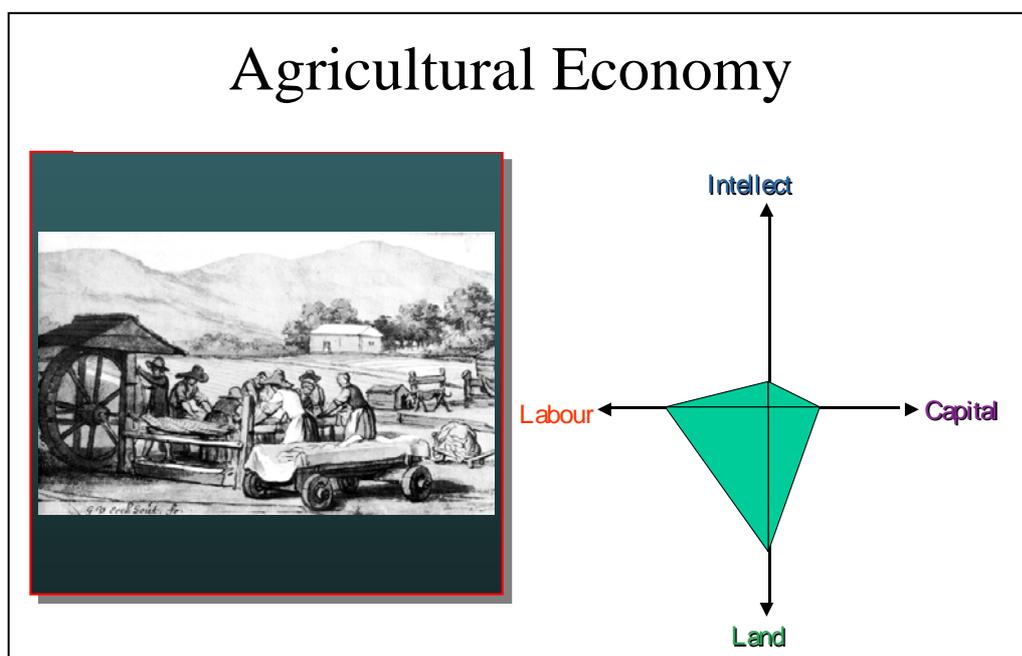
The emergence of the knowledge-based economy – retracing the steps

We are living in a world of far-reaching and significant change, where many observers talk of a transition taking place from an industrial to a knowledge-based paradigm. Economies are witnessing the large-scale restructuring and contraction of traditional industries and the emergence of a 'new' economy where new economic activities and structures are developing. The world is shrinking due to globalising forces and electronic connectivity, traditional supply chains are being compressed and reshaped, and new skills are required to replace those more suited to a mass-produced industrial world. This transition from the comfortable 'old' to a different and unfamiliar 'new' economy is taking a little time to play out, but there is one thing upon which everyone seems to agree - the pace of change is becoming ever more rapid.

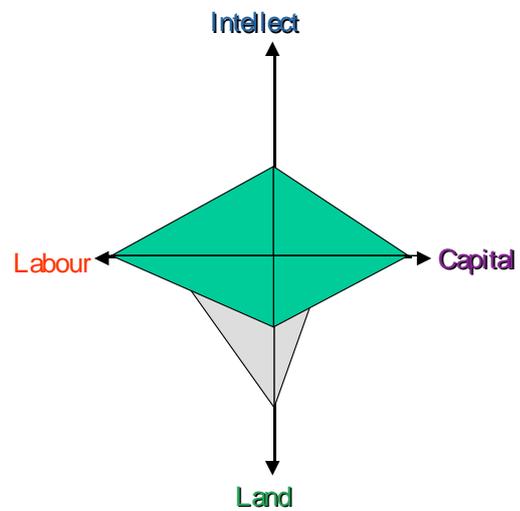
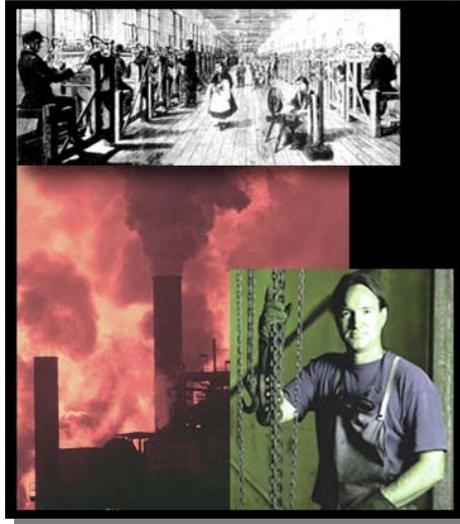
It took 200 years for the industrial economy to emerge, mature and wane and already, the knowledge economy – driven by the remarkable power of engineered silicon – has been with us for four decades. While the dramatic transformation of the economic landscape has undoubtedly some way yet to go, many commentators are now forecasting that the years 2010 to 2020 will herald the coming of the bio-age, driven by developments in genetics.

Many theorists have constructed models to attempt to explain the transformation of economies - from the agrarian to the industrial and from the industrial to the knowledge age. One can show diagrammatically the inter-relationships between key economic factors (land, labour, capital, intellect) to characterise the way in which most economies have developed. In the three diagrams below the shaded part illustrates the sources of wealth and value, as opposed to the volume.

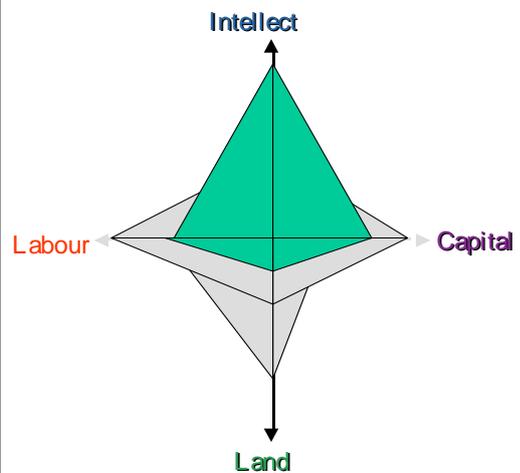
Figure 1 – Mapping the key forces shaping the development of economies



Industrial Economy



Knowledge Economy



[Source : Global Business Network]

It is worth acknowledging that new knowledge and technological innovation have always influenced economic growth and well-being. They allow us to combine and transform raw materials in order to create new value. The invested know-how, rather than the raw materials or the capital investment, accounts for a large share of the quality and value produced. However, what *is* new is that the knowledge component is becoming increasingly important and is now a critical factor in economic growth.

Increasingly, modern competitive economies are characterised by the relatively high intensity of knowledge or information that goes to make up

products and services. No longer can companies compete globally by cutting labour or manufacturing costs; there will always be a company or emerging economy which can undercut European producers or operate at a higher level of productivity. Instead, economic value is increasingly to be found in the research, ideas and knowledge that are 'embedded' within products and services. Organisations are seeking new ways of creating, storing, distributing and applying their knowledge. Driven by ever more competitive markets and the convergence of hitherto separate technologies, organisations constantly have to find new ways to innovate in product and service design. The challenge is to harness information and knowledge ever more effectively in ways which customers will value and pay for.

Take some examples :

New sources of value :

- A new car now possesses more computing power than Apollo 11
- Many communication devices, including mobile phones and digital TV set-top boxes, are increasingly being provided for free – it is the associated service which is the valuable element.

Speed to market :

- Planned obsolescence is central to many manufacturers' strategies
- Every Microsoft product is specifically designed to become obsolete in 18 to 24 months
- 3M estimate that a 50% cost over-run in R&D cuts profits by 4% but a six month delay in production cuts profits by a massive 33%.

An increasingly global, connected economy :

- It is estimated that the number of EU internet users will treble between 1999-2001 to 120 million
- The value of global e-business reached €1.4 trillion in 1999 and is predicted to grow exponentially in the short term
- The global dissemination and adoption of innovation is increasingly rapid - in one day today we undertake the same quantity of :
 - world trade than in 1949
 - scientific projects than in 1960
 - telephone calls made in 1983
 - e-mails sent in 1990.

These examples demonstrate very powerfully that economic value is increasingly to be found in intangible assets, connected with research, design, brand reputation and future market potential. While the extraordinary stock market valuations of some new 'dot.com' companies are currently experiencing considerable fluctuation, Figure 2 nevertheless demonstrates this very clearly in comparing the market capitalisation of more established companies characterising the 'old' and 'new' economies. Contrast the two groups of multinational corporations; while their net value of their assets is roughly the same, the market value of the three IT-related companies is *ten* times that of the three powerhouses of American manufacturing.

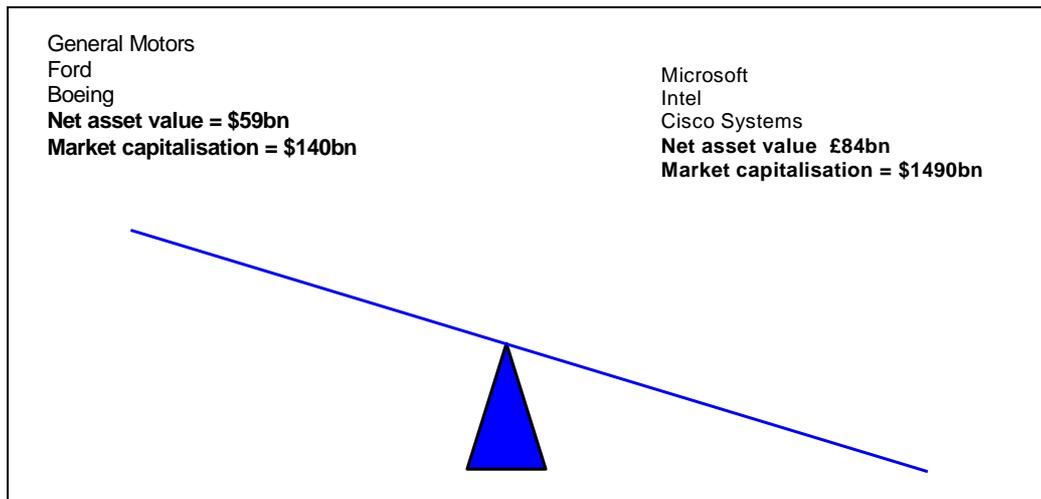


Figure 2 – Valuing the future potential of companies in the knowledge economy
(Source : Yahoo Finance, March 2000)

One key concept worth stating, since it is often misunderstood, is the nature of the transition currently taking place from the industrial and service-based economy to the knowledge-based economy. This is not a sudden transition – although the rate of change in modern societies seems to be happening ever more quickly – but the transformation is occurring at different rates across society and the economy. It is a gradual change and we can often see confusing signs all around us. Earlier this year, for instance, UK media and politicians focused simultaneously on the Lisbon Summit’s debate on the knowledge economy as well how to save the future of the Rover car manufacturing plant in the West Midlands following its sale by BMW.

Perhaps it is more instructive to consider the *evolution* of economic activities as they adapt and respond to new challenges and opportunities. The knowledge economy is in fact *growing from*, and not replacing, the industrial economy.

A second key point is that the knowledge economy is affecting the whole of economy and society. Some people talk of “knowledge workers”, who undertake particularly knowledge-intensive occupations such as consultants and researchers. However, we should think more in terms of gradual shifts taking place within *all* occupations. As we shall see later in this paper, all of our jobs are changing - even those that we wouldn’t immediately recognise as being “knowledge-based”.

The rapidly-expanding literature suggests that to be successful in the knowledge-based economy – whether at the level of a company, region, Member State or the EU itself – requires the flexible combination of many ingredients. These include not only those related to the identification and application of ideas and knowledge but also many others :

- visionary leadership and far-sightedness
- a global focus
- close relationships between producers, customers and suppliers
- flexibility and adaptability
- a commitment to developing skills, learning and knowledge
- an entrepreneurial culture
- constant innovation and the application of technologies
- good networking, including application of information and communication technologies (ICTs).

To help understand the inter-relationships between these various ingredients the following sections provide a brief overview of the ways in which businesses and customers are responding to the knowledge economy. In many instances, as the examples demonstrate, this new economy is quite radically creating new and re-shaping 'old' industries and relationships.

(a) The transformation of manufacturing industries

The popular image of manufacturing industry is still of 'heavy industry', where large shipbuilding, steel and textiles companies made "things". But many of these traditional industries have seen large-scale rationalisation, others have evolved and new ones have emerged. Successful manufacturing companies are learning to adapt to these changes.

Let's consider how manufacturing is changing :

- technology has improved productivity and led to diminishing economies of scale, as well as allowing more international, quicker product development and improved customisation of products;
- the internet is helping to compress value chains, taking traditional intermediaries out of the system and enabling manufacturers to interact directly with their customers. This imposes real-time transparency on all types of transactions, from the point of sale to raw material manufacture, and no manufacturer is now distanced from their customers;
- automated logistical systems across supply chains provide dramatic efficiency gains, from geographic information systems to computerised monitoring and control systems;
- labour-intensive production processes are increasingly being out-sourced to lower-wage economies across the globe with considerable cost savings;
- as a result, many companies are focusing on their core business – where greatest economic value is created – and restructuring their businesses to maximise efficiency and profitability.

Some of the relative shifts taking place are shown in Figure 3 below.

Industrial Age	➔	Knowledge Age
Value from efficiency		Value from creativity
Investment in plant		Investment in innovation
Inventory		Information
Product orientated		Consumer orientated
Mass production		Flexible production
Mechanisation		Digitisation
Long product life-cycles		Short product life-cycles
Local manufacturing		Globalisation
Careful planning		Change and innovation
Early career training		Lifelong learning
Competitive relationships		Co-operative networks

Figure 3 : Key trends in the transformation of manufacturing processes

But the nature of demand is also changing, with consumers becoming more sophisticated and demanding. They can now buy cheaply from anywhere in the world and as a result are making decisions on less tangible attributes such as quality of service, brand name and the buying 'experience' as well as on the quality and cost of a product. Responsiveness to the needs of customers and speed to market is now winning market share for manufacturing companies. Significantly, companies are also learning to value and keep their customers where the cost of a customer 'defecting' can be extremely high.

Given the increasing importance of customer relationships, companies are developing longer-term strategic relationships with their customers to service their total package of needs around a manufactured product. Manufacturing is redefining its boundaries and its image, and products are increasingly being customised. Firms that previously just made "things" are becoming "value chain coordinators", providing a package of services around their products across the life-cycle of that product. In fact, the distinction between manufacturing and services is increasingly becoming blurred, and services such as software engineering and design now account for a higher proportion of the value of manufactured products than ever before. The examples below illustrate that for some how manufacturing companies, their products are now almost incidental to the service provided.

Case study : Manufacturing companies' successfully adaptation strategies

- **United Closures and Plastics**, a Scottish bottle cap manufacturer, while still manufacturing bottle caps, now generates more revenue through selling design and problem-solving capability to customers. They are exploiting their knowledge while retaining their core manufacturing competency.
- **General Electric's** mission statement is to be a services-led company based on the supply of manufactured products. GE are known for products such as jet engines but now sell "power by the hour" to customers, taking on the burdens and uncertainties of maintenance (previously transferred to the customer at the moment of sale) and eliminating capital expenditure barriers. This provides benefits all round. The customer receives assured service and a strategic partner to help develop its core business and can concentrate its efforts on its own value-adding activities. GE has a continuing relationship with its customers which translates into more predictable repeat business and cash flow. It learns from its customers and feeds this learning back into product development, and can charge more for the total product and service package provided to its customers.

(b) New and different service industries

The service sector is acknowledged to have been the key source of new jobs in recent years and given the blurring we are seeing between services and other economic activities, will continue to act as a key engine of growth. However, the key forces shaping the economy generally – the convergence and combination of ideas and relationships, technological change, more demanding and empowered consumers, and globalisation - are also resulting in much more profound change across the entire service sector.

Developments in ICTs and the internet in particular are both creating entirely new types of intermediary services as well as transforming existing areas. Value chains are being compressed and in some cases, entire activities are removed from the value chain (in the jargon this is known as disintermediation). The European automotive supply chain, for example, which includes parts and raw materials en route to factories or in stock, currently ties up €150 bn; it is estimated that ICTs can reduce this figure to around €20 – 30 bn. The case study below illustrates some interesting examples of emerging new services and business models.

Case study – The emergence of new services

(a) Demand aggregation :

Letsbuyit.com essentially facilitate the consolidation of buying power. As a starting point, the website shows the price of a particular product if only one person was to buy it. But they also show how the price would reduce if, say, 100 people or 1000 people were to buy it within a certain period. This closing date encourages consumers to act as salespeople themselves, letting their friends and relatives know about the offer.

(b) Active intermediaries :

Not only do **Amazon.com** offer books and now CDs, videos and a range of other consumer goods at prices undercutting high-street retailers but they also interact with their customers. If they like a certain author or band, then Amazon let them know which similar books or CDs they may wish to buy.

(c) Connectors :

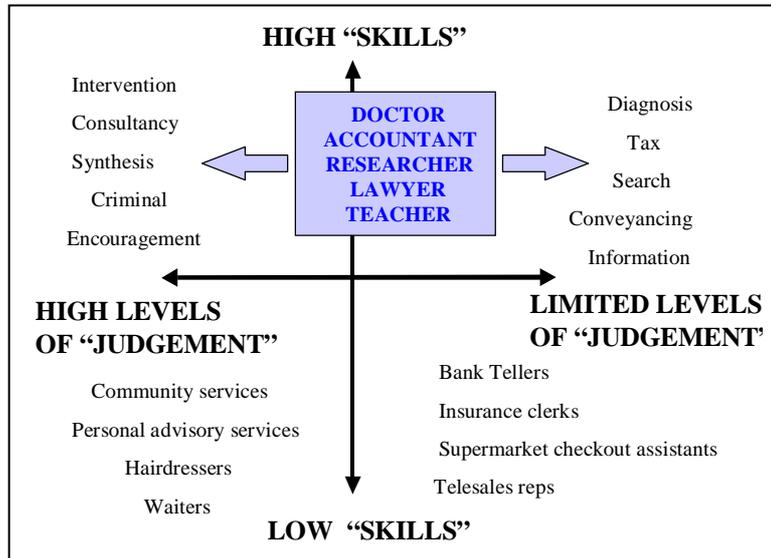
Lastminute.com have found a particular niche in the travel market by connecting last minute buyers of flights, holidays and hotel rooms which otherwise would be left unsold to last minute sellers.

(d) Metamediaries :

Metamediaries take responsibility for all aspects of buying, servicing, owning and selling a product. **IOwn.com**, for example, take the hassle out of buying a house : researching the best mortgage offers; arranging insurance, home improvements and removals; and profiling your new community (school performance tables, crime figures and so on).

Some new intermediaries, such as internet banks and travel companies, exploit the fact that customer-facing occupations involving relatively low levels of personal judgement (bank clerks and travel agents, for instance) can quite easily be delivered via the web. We are accustomed to thinking of high skill occupations (including professionals such as lawyers and doctors) as offering

the best work opportunities in society. But perhaps we should re-think our assumptions and instead consider the levels of *judgement* required in certain occupations. Figure 4 suggests a framework for characterising different types of skills and occupations. Increasingly, technology offers ways of replacing those types of activities on the right hand side of the diagram.



For Scotland and other geographically peripheral regions throughout the EU, call centres have provided a key source of employment as companies have outsourced their telesales functions. Glasgow, for example, is one of Europe's leading locations for call

Figure 4 : A framework for categorising occupations according to the value they create for knowledge-based organisations.

centres and in total, around 1% of Scottish employment is accounted for by call centres. But as the new generation of web-enabled call centres is developed, providing more interaction with customers, some of these jobs may be threatened. The recent development of mobile WAP technologies provides yet more emerging opportunities. Regions therefore need to address the implications of continuing technological development on their employment and skills development strategies. The paper returns to this issue later in relation to the implications of the knowledge economy for governments and public intervention.

(c) Satisfying customer demands

The ever-closer relationships between organisations and their customers are one of the defining characteristics of the knowledge economy. Not only is the nature of consumers' demands changing rapidly but the way in which their demands can be met is being drastically transformed by new technology. Now that the internet enables customers to compare prices for the same product across the world – and forces producers to match the cheapest – the differentiating factors are less about price and more about intangibles such as quality of service, brand name and the buying 'experience'.

The huge expansion in global connectivity, brought about by the internet in particular, is fundamentally changing the very nature of customer relationships. Distance and organisational boundaries are dissolving, e-

business is becoming more pervasive and social values are gradually changing. The effect of all of these shifts is that the consumer is becoming far more empowered than ever before; no company is isolated from the end customer.

As the balance of power moves towards customers they are able to express their needs and desires in different and individualised ways. They will increasingly demand customised products and services, exercising their choice in more sophisticated and demanding ways.



Figure 5 - The increasing segmentation of consumer aspirations
 [Source : Global Business Network]

As the above matrix shows, in some instances, customers will want both affordable prices and a passive relationship with the supplier, having the company “do it for them” (K Mart in the US being a good example). On the other hand, visitors to a Disney theme park or people viewing an IMAX film want an experience but are still relatively passive in the process. Activity holidays, in contrast, are a dynamic experience where the customer is an active participant and helps create the value of the experience. Lastly, the popularity of internet “day trading” and DIY stores demonstrate that for some services, customers want to be highly active in creating a product but expect to pay less for it.

A shift is gradually taking place from the mass-produced to the customised and the personal. No longer, as Henry Ford once famously pointed out, will everyone have to buy black but products and services are increasingly being tailored to many, many segmented markets. Soon, intelligent web browsers will be able to ‘learn’ your individual likes and dislikes and search out information, ideas, products and services on your behalf. In the longer-term,

emerging nanotechnologies will allow products to be designed and produced at a molecular scale. Given the possibility of 'smart', individually customised products made much more cheaply from these new materials, nanotechnologies could potentially transform the future economy.

Of course, as commoditised, mass-produced goods mature, the ability for companies to earn profits generally declines. In a world, therefore, where markets are increasingly segmented to reflect consumers' demands, innovation and customisation become much more important. We are already familiar with shorter and shorter product life-cycles and the notion of 'planned obsolescence' within many company strategies. In effect, the knowledge economy requires a deconstruction of the traditional way in which companies operate. Establishing a culture of constant innovation is already an absolute imperative for successful companies.

Companies can remain competitive not only by continuous innovation but also by developing longer-term relationships and *interacting* with their customers. A smart strategy pursued by some companies is to draw on their customers' knowledge, aspirations and preferences and to build these back into the redesign of their products and services – the co-creation of value. Amazon's website, which prompts people to purchase books similar to those they liked in the past, is a good example; another is the US company Banner Blue.

Case study – Co-creation of value

Some years ago, Banner Blue developed a software programme - *Organisation Maker* - to design organisational charts. When they realised that people were actually using it to develop family trees they revised it and relaunched it as *Family Tree Maker*, which proved very successful. Banner Blue then decided to pay \$5 to each of their original customers to download their family trees on to a disc and return it to the company. Having first undertaken quality checks and then aggregated the many thousand family trees they then overlaid it with the Mormon archives and repackaged all of the information as the next version of *Family Tree Maker*. Finally, the company have connected families sharing the same name and formed clubs. This example illustrates very well the way in which interaction between producers and customers can create new value on both sides.

In tracing the development of customer-supplier relationships, some commentators now refer to the emergence of an "experience economy". In essence, just as we recognise the value inherent in the provision of a service, there is significant value in providing *experiences* to consumers. Consider the rise of theme parks (Eurodisney), theme restaurants (Hard Rock Cafe), adventure holidays and virtual reality games; consumers are willing to pay a handsome premium for the experience gained from these activities. Some companies market themselves on this very basis and the former chairman of British Airways, Sir Colin Marshall, for example, noted "*what BA does is to go beyond the function and compete on the basis of providing an experience*". The company uses its base service – the act of travelling from A to B – as a stage for a journey which is a memorable respite from the travellers' normally frenetic life.

Economic offering	Commodities	Goods	Services	Experiences
Economy	Agrarian	Industrial	Service	Experience
Economic function	Extract	Make	Deliver	Stage
Nature of offering	Fungible	Tangible	Intangible	Memorable
Key attribute	Natural	Standardised	Customised	Personal
Method of supply	Stored in bulk	Inventoried after production	Delivered on demand	Revealed over a duration
Seller	Trader	Manufacturer	Provider	Stager
Buyer	Market	User	Client	Guest
Factors of demand	Characteristics	Features	Benefits	Sensations

Figure 6 : Defining the experience economy
[Source : Pine and Gilmore, 1998]

(d) Business relationships and values

Many of the illustrations earlier in this paper of the ways in which the knowledge economy is transforming manufacturing and service sectors have emphasised the increasing importance of relationships and networks. These are vital in the acquisition, accumulation and sharing of knowledge and ideas.

In the past, most organisations tended to be structured in vertical ways, using ‘command and control’ hierarchies. But since these tend to hinder rather than promote the spread of knowledge (perhaps perpetuated by the “knowledge is power” mantra), most organisations are now exploring ways of creating flatter, less hierarchical structures. Some are experimenting with more innovative methods of promoting knowledge-transfer and generating new, creative ideas such as inter-disciplinary teams and innovation “cells”.

Increasingly, however, the transfer of knowledge is dependent on relationships extending beyond a single organisation to a broader network – we now talk of ‘webs’ rather than ‘hierarchies’ – who all contribute value and ideas. In economic development terms there has been much recent interest in the potential of clusters to build competitive city and regional economies. Many commentators have observed the rapid economic growth achieved by certain cities and regions that host clusters of linked companies and institutions, drawing agglomeration economies from each other and competing effectively in international markets.

Case study : The cluster approach

Many areas are currently experimenting with cluster-based approaches to regional economic development given the increasing importance of networks and relationships. A working cluster is a diverse, dynamic and integrated network based around a particular geographical area and/or technology. It differs from a sectoral approach owing to the family of players gathered around the core of existing commercial or research strengths. Typically, these will not merely include competitors but also suppliers, customers and related organisations (utilities, financial institutions, research bodies, further and higher education institutions and other public organisations). By exploiting the synergies between these related organisations a cluster is designed to lead to economic benefits which far outweigh the resources invested.

The development of a cluster involves a range of activities :-

- building a collaborative strategy to address the common issues which will help build and sustain competitive advantage for the cluster
- encouraging new relationships to share knowledge and spark innovation
- generating recognition of shared concerns, opportunities and needs - and a willingness to address these.

Scotland currently has four industry-led clusters in place - Food and Drink, Biotechnology, Semiconductors, Forest Products - and is investigating the potential for more future clusters in Tourism, Optoelectronics, Creative Industries. Other examples of European clusters include the Styria automobile cluster (Austria), the BioRegio programme in Germany, telematics and telecommunications in the Netherlands, the Italian industrial districts, the Danish environment/energy and the Finnish forestry clusters.

Kevin Kelly's book "*New rules for the new economy*" highlights why networks are so important in the growth of the knowledge economy. Metcalfe's Law (after Bob Metcalfe, the inventor of Ethernet, a localised networking technology in the later 1970s) suggests that as small networks are connected together, the value of the combined large network multiplies abruptly. The number of potential contacts in a computer or social network increases significantly when more are added, resulting from the sum of all possible connections plus the many multi-way combinations. Consider also the number of new European Commission translators needed once the next round of Accession States joins in a few year's time ! In contrast to the notion of economies of scale where returns increase linearly, networks can lead to exponential increases in value. In simple terms, it's the difference between a piggy bank and compound interest.

The example of co-creation by Banner Blue illustrates this very well, as does the growth of adoption of fax machines. After two decades of marginal success, the number of fax machines quietly crossed the threshold of no return in the mid-1980s and now they are ubiquitous. Perhaps PCs and mobile phones will shortly follow.

At their root, networks are all about relationships between people, people who are able to share ideas and thereby create and transfer knowledge. One reason why some localised clusters (for example, Silicon Valley or the M11 Corridor near Cambridge) are so successful is that their networks of social capital are particularly strong. As AnnaLee Saxenian notes, Silicon Valley has in effect become one large networked company. People job-hop so frequently that people "*joke that you can change jobs without changing car*

pools. Some say they wake up thinking they work for Silicon Valley. Their loyalty is more to advancing technology or to the region that it is to any individual firm”.

There is increasing discussion around the contribution of cultural values to organisational or national competitiveness : to what extent are certain values relevant to success in the knowledge-based economy ? Charles Hampden-Turner has pointed to the success that national policies of accelerated learning made to the rapid growth of East Asian economies since the mid-1970s, where learning is driven by cultural values which extol wisdom, complexity, scholarship and intellectual prowess as ends in themselves. Japan, Singapore, Malaysia, Taiwan and others have all reskilled their workforces for knowledge-intensive occupations and have out-sourced their simpler products, becoming major global competitors in the process.

Networks and clusters generally tend to promote co-opetition, that is, strategies which encourage both competition and cooperation simultaneously (see below). Hampden-Turner has taken this concept a stage further and advocates the creation of a “compassionate marketplace”. Noting the tendency of the public to give generously to charities following natural disasters or to boycott the products of non-environmentally responsible companies (the Shell Brent Spar incident, for example), he suggests that public compassion to reflect its values can be harnessed for economic benefit.

Case study : IBM and co-opetition in business

IBM realised that by changing the way in which their salespeople competed with each other each quarter, the level of information shared, and ultimately profits, soared. Initially competing on the basis of computer systems sold, salespeople tended to hide information from each other. And as customers were cajoled into buying, resistance grew. But by changing the competition into “what-I-learned-from-customers-in-the-last-quarter” the sales force were encouraged to share knowledge to gain recognition. They were rewarded with better customer information and a 35% increase in sales in the first year.

In the UK, the Body Shop is a well-known opponent of using animals to test pharmaceutical products, and its franchises must also demonstrate environmentally- and socially-responsible credentials by supporting an imaginative community project, such as supporting a refuge for battered women. These local causes are not donations but investments in the company’s own business. Similarly, Kodak cannot make significant headway against Fuji Film in Japan because the latter is known to be a massive benefactor to Japanese society, and employees aspire to work there. Can this notion of a compassionate marketplace be applied at the European scale – in other words, an adaptation of the European social model to the knowledge economy ?

Implications of the knowledge-based economy for ...

A. Improving social cohesion

The development of a highly networked and knowledge-intensive economy brings with it many challenges for regions and governments keen to improve the level of cohesion in society. Many challenges relate to the relative lack of access to skills and knowledge by the 'disadvantaged', which affects their ability to participate effectively in the economy and society. However, there are other challenges related to levels poverty, the development of the social economy and cultural acceptance of change.

One of the great difficulties in discussing such a broad topic is being able to adequately address the issues in any significant depth. At the risk of taking too narrow a focus, the paper will instead concentrate on social cohesion issues in the sphere of economic development. In other words, these are the issues that regional administrations and agencies can influence directly, as opposed to national policies relating to social welfare and pensions.

(a) Improving skills and knowledge through promoting lifelong learning

Much has been written and said in relation to the changing nature of disadvantage. Some point to the increasing importance of being IT-literate in the future. In the language of the "information-rich" and the "information-poor" there is a risk of a "digital divide" opening up in society. Not only must European economies provide income-generating opportunities but this income-generating potential must be available and open to all.

But participation in the knowledge economy – in a world where occupations displaying relatively limited levels of judgement are liable to be replaced by technology – depends on much more than familiarity with IT packages and more specialist ICT-related skills.

First, there are disturbingly high levels of functional illiteracy and innumeracy in some workforces such as in the UK. Such basic skills are a pre-requisite for efficient and effective functioning in society. Even the provision of employment-related skills is poor in many parts of Europe. In the UK, for example, one in three adults currently receive little or no training from their employer and skills surveys show that one in four of the adult workforce are in jobs where their qualifications are not needed.

Second, various EU and national employment-related documents rightly also place particular importance upon core skills – employability, adaptability, enterprise and equality. Employability skills also include 'person to person' skills, those social interaction skills necessary for developing and maintaining relationships. These core skills provide the essential building blocks to creating a flexible and adaptable future workforce and are relevant for *all* occupations, not just those with a high 'knowledge' content. Figure 7 highlights some of the core attributes and skills required for effective participation in the knowledge age.

Thirdly, flexibility and adaptability to changing economic circumstances are particularly important for workers. As the shift from the industrial to the knowledge economy takes place, the shake-out of industrial employment has a disproportionate impact on lower-skilled individuals. Manuel Castells, for example, argues that not only are the USA's increasing problems of social polarisation and exclusion products of the shift towards the information economy, but that they serve as a model of the likely outcomes of the move towards a globalised, free market economy elsewhere.

Core attributes	Core skills
Creativity Problem-solving Working collaboratively Communicating Listening skills Flexibility Capacity to learn Handling conflict effectively Valuing diversity Offering new ideas / adding to Others' ideas	Literacy Numeracy Interpersonal skills Computer literacy Technical skills

Figure 7 – Core attributes and skills for the knowledge economy

The concept of lifelong learning is now widely accepted by most policy-makers, designed to ensure that there is a continual upgrading of individuals' skills "from cradle to grave". This requires a 'cultural' shift in attitudes and behaviours from individuals, learning institutions, employers and Governments to be successful. But beyond providing access to a prosperous working life the embedding of lifelong learning will also help achieve other, wider objectives related to social, community, voluntary, cultural and citizenship objectives .

However, many policy documents and initiatives still appear to have a preoccupation with formal learning, particularly within school and post-school full-time education. Other forms of learning tend to be perceived as second-class and, unsurprisingly, are deemed second-choice by learners. Training opportunities for the unemployed, the disadvantaged and excluded are presented as programmes or schemes to which entry is determined by 'failure' to succeed – failure to attain the "right" qualifications, failure to secure and keep a job.

Moreover, certain structural barriers in our skills, education and training systems, such as lack of time, money, childcare and even the delivery mode for learning, compound difficulties in expanding learning opportunities to all.

The launch of the recent eLearning initiative, focusing on the adaptation of education and training systems is welcome : all learning institutions must adapt to offer learning at a price that suits learners when, how and where they choose. But for this to be successful requires increased awareness of the

importance of learning – and, critically, increased demand for lifelong learning by both individuals and employers – as well as mechanisms for empowering learners. The case study below provides examples which attempt to address both of these goals.

Case study : Empowering individuals in lifelong learning

- The **Scottish University for Industry** (<http://scottishufi.co.uk>) will be launched in 2000 and aims to become an independent broker for learning. It will connect people, businesses, public and voluntary organisations who want to improve their skills with the people who can offer them the learning they need, delivered how, where and when most convenient to them. It aims to drive the demand for learning through information, marketing and promotion and will be available to every adult in Scotland. Specifically, it will offer people :
 - information on the learning opportunities they need
 - helpful advice on courses, on-line learning, funding support and childcare
 - an opportunity to sign up directly for learning via the helpline or web-site
 - a wider range of learning options in the right place at the right time
 - easier access to gaining new knowledge, skills and qualifications.
- **Individual Learning Accounts** are being extended throughout the whole of the UK during 2000 to help people invest in their own learning. In Scotland the Government is contributing £150 (€237) to every learner who applies for an account on condition that they also contribute an additional £25 (€40). The Government's target is to create 100,000 ILAs in Scotland by 2002. By assisting people to plan for their future skills needs, ILAs will make a significant contribution to developing workforce skills and boosting competitiveness.
- A network of **local learning centres**, linked to SUfi and ILAs, is now being created across Scotland. By April 2001 there will be 100 new community-based learning centres to help promote learning and to focus efforts on promoting social inclusion. In addition, 500 new SME centres will be established aiming to deploy 1100 tutors supporting 5000 learners.
- The **Learning Upper North Karelia** pilot project (<http://unk.pkky.fi>) in East Finland aims to improve information society access and capabilities of people living in this sparsely populated rural area (4500 km²). Individuals are actively encouraged to participate in designing and using a regional community intranet network ("Kansalaisverkko"). This offers access to e-mail, personal and business homepages, local information as well as the internet, all for the cost of a local phone call. In addition, over 30 computer kiosks in banks, restaurants, shops and libraries provide free access to the network. Penetration has reached 40% of the population (22,000) in the northern part of North Karelia. The pilot is now being extended throughout Finland.

(b) Poverty and economic inclusion

Poverty remains a disturbingly persistent and difficult barrier preventing many from participating fully within the knowledge economy. In both the UK and US, income inequalities have increased in recent years. In the US, for example, real incomes rose by 58% between 1980 –1996 for the wealthiest 5% of American households, but less than 4% for the lowest 60%. While it is too simplistic to attribute such trends solely to the emergence of the knowledge economy it is certainly the case that poverty and levels of skills and educational attainment are closely linked. Lower-wage earners and the less skilled are, very broadly therefore, more vulnerable to becoming casualties of economic change. Fiscal, educational and social policies need

to work together to ensure that everyone can participate effectively in the economy.

In the context of the oft-mentioned 'digital divide' it is, unsurprisingly, lower income groups who can least afford new technologies as Figure 8 demonstrates. However, as technologies mature and prices fall, adoption should begin to increase markedly for existing products such as PCs. Wider (and perhaps free) connectivity, owing to the deliberalisation of EU telecommunications markets, will also help increase access to ICTs. It is also worth mentioning that in only a few years, digital TV will be the platform for internet access, a medium with a far higher saturation rate than PCs.

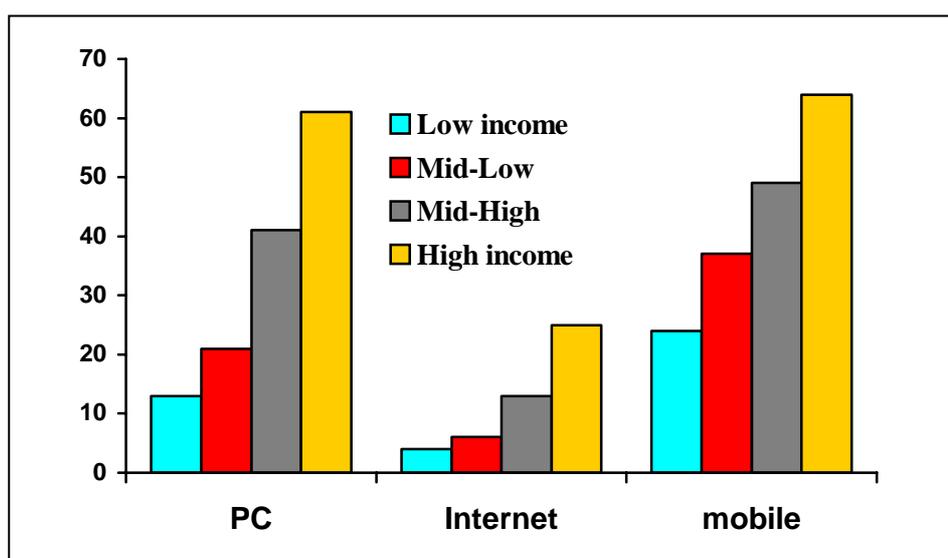


Figure 8 : Technology use by household income
Source : E. Liikanen (2000b)

(c) *Developing the social economy*

The European Commission's identification of 17 'new' areas of job creation, such as the care sector and personal services, illustrates recent efforts to look to redefine the boundaries of wealth-generating opportunities and to enable all to participate economically. This has been echoed within Scotland in the rapid expansion of the social economy since the 1970s. This sector, comprising a wide range of cooperative, community enterprise and social housing organisations, has recently been estimated to account for around 3% of Scotland's GDP and plays an important role, usually at a local level, in generating wealth-creating opportunities with a clear social purpose.

There are significant opportunities for realising the potential of the social economy and also of finding ways for mainstream business to contribute to wider social objectives. Initiatives at all levels are being introduced to involve the social partners in policy development and implementation. Many far-sighted companies are seeing investments in 'social infrastructure' (people, child care, local community infrastructure and charities) not as acts of altruism but as a genuine investment in their collective future.

(d) *Cultural acceptance of change*

It is worth reiterating once again that the implications of the knowledge-based economy are already affecting everyone in society, employed or unemployed and across all occupations. It is a popular misconception that the knowledge economy equates to a “high tech” economy. In the interests of improved future social cohesion, steps could therefore be taken to help change attitudes and increase acceptance of change generally.

Indeed, it is worth noting that the very rate of change happening with the economy is in turn creating social and cultural tensions. If regions and countries are to be successful in creating and adopting new innovations then there needs to be a culture where there is an acceptance of change. Of course, change does not happen evenly and this may lead to particular difficulties for certain parts of the population (eg older people, the less educated). This is an area where EU and Member State policies can assist to ensure that the knowledge economy is also as inclusive as possible.

B. Organisational development and new business models

This paper has described how, in the industrial age, hierarchical “command and control” models were appropriate organisational structures for businesses and public institutions. Since production functions were highly specialised and compartmentalised, ensuring that each function “did as it was told” was critical to efficient operation. The strictly enforced pyramidal structure borrowed from the military suited this purpose well.

Organisations in the industrial age also employed other systems designed to support the operational efficiency of their hierarchical structures. For example:

- new employees were normally taken directly from the educational system, with the expectation that jobs would be for life. This strongly supported the need for embedding specific knowledge, about specific processes in specific individuals;
- communications were largely from top to bottom. Information collected from the bottom was normally confined to accounting data, which allowed for collective measurement of performance at the coal face of operations;
- planning systems were budget-driven and short term in nature;
- management and staff development was largely confined to “on-the-job” training, using informal mentoring systems to teach employees “how we do things here”;
- inter-organisational mobility was extremely limited, as the specific skills learned were not easily transferable outside the workplace; and
- organisational cultures were strong, embracing and exclusive.

However, few of these concepts and structures appear to be appropriate for the knowledge economy. Instead, successful modern businesses and other

organisations tend to be much more innovative, adaptable and agile, sharing some of the following characteristics :-

- flatter organisational structures
- a culture of continuous innovation and learning, from shop-floor to Board level
- a global outlook and framework, even if presence is still mostly local
- diverse human capital
- a knowledge-sharing culture
- a permeable structure with staff and secondees moving fluidly both within and outwith the organisation
- the sharing of rewards
- openness and transparency of information.

While flexibility and “nimbleness” is undoubtedly very important, it would be wrong to think of modern organisations as having a total absence of structure and control, however. Some of the best organisations have introduced a range of necessary controls. For instance :-

- Cisco Systems “closes” its accounts daily
- Microsoft aggressively protects its core intellectual property (its source code)
- Daimler-Benz refuses to compromise on quality
- the Virgin Group refuses to compromise on its values

In contrast to these market-leaders, however, reality is sometimes quite different. Many companies and organisations still pursue traditional, hierarchical models of work organisation and job design involving cost-cutting, price-led strategies. In this environment there is little scope to utilise higher levels of skills and to innovate. Keep (2000) suggests that there is a danger that current debates on job creation and new employment may become focused on low paid, low skilled work, concentrated in firms and market strategies which are not innovative. He argues that isolated strategies for boosting the supply of skills would be ineffective. What is required is an integrated approach to business strategy, organisational development and management skills that helps business address the way they compete, structure work and their demand for skills.

The Future Unit of the UK Department of Trade and Industry have developed two scenarios which attempt to describe the future of work around 2015 (see below). It is likely that in the complex economy of the future elements of both will be apparent. However, the challenge for businesses and Governments is to anticipate whether one scenario will develop more strongly than the other.

This scenario thinking exercise led the DTI to make recommendations for its own future policy, to prepare for either scenario. The series of recommendations supports Keep’s view that future business development policies should provide an integrated blend of measures :-

- increasing understanding of organisational change
- supporting small businesses and individuals in an on-line world
- fostering a culture of innovation and enterprise
- anticipating future skills and competence needs of businesses and individuals
- developing 'new' economic and social intermediaries
- improving the quality of workplace human resource strategies
- ameliorating negative social effects of economic developments.

Case study : Two scenarios depicting work in the knowledge-driven economy (DTI)

- **Wired World** is composed of a network of economic agents coming together, via secure and efficient ICTs on a project-by-project basis, held together by a web of contracts. Thus, self-employment and portfolio working are common and small, innovative and responsive businesses have become the dominant force in the economy over large, established businesses.
- **Built to Last** starts from the basis that if knowledge is the principal source of competitive advantage then it will be in the interest of business to capture and internalise that knowledge. This can be done by offering comprehensive remuneration packages to retain the individuals in whom knowledge is vested. Consequently, we see an economic landscape dominated by stable and often large companies and extended families of companies. Self-employment and temporary contract work are therefore rare.

The two scenarios may be characterised respectively as a 'transition' and a 'relationship' economy.

C. Governance and governmental structures at regional, national and EU levels

One of key challenges for governmental structures at all levels today relates to the changing nature of the relationships between government and the economy. Developed around the concept of a nation state with hierarchical local and regional structures, governments have traditionally intervened at both macro and micro levels to improve the operation of the economy and society. However, the development of increasingly interdependent, global markets as well as the broad shift in goods and services from the tangible to the intangible prompts speculation as to whether national and regional governments still have the appropriate powers, tools and resources to effectively manage change in the knowledge-based economy.

This networked, global economy brings a variety of new circumstances for regional and national governments :

- tax revenues are more uncertain given the increasing value of e-business and out/in-migration of individuals;

- low-cost ICTs are reshaping production and logistics across the globe, making services tradable over long distances and opening up global markets for markets traditionally operated within national boundaries (education, transport, finance and telecommunications, for example);
- governments are less able to control macro policies – particularly factors outwith their boundaries – and therefore must increasingly focus on managing endogenous resources;
- the need for flexibility and openness required by globalised markets has meant that governments are increasingly integrated within this global system and are less able to operate independently;
- the emergence of larger trading blocks, such as the EU, effectively leads to a relative shift of regulatory powers from regions and nations to the supra-national level.

More generally, the knowledge economy also poses serious challenges to the relationship between government (at all levels) and its citizens. Thomas Friedman (1999) summarises the conundrum faced by political theorists today : *“how to give citizens a sense that they can exercise their will, not only over their own governments but over at least some of the global forces shaping their lives ?”*. The forthcoming EU White Paper promised by President Prodi will hopefully shed some light on exactly this topic.

Given the weakening ties of ‘communities of place’ and the relative increase in ‘communities of interest’ – spurred by the internet – there is a need to find ways of re-connecting governments and citizens. Finland’s policy of rolling out regional intranets to make the ‘information society for all’ a reality provides one solution to this challenge. While it may be a little extreme to say that the issues presented by the knowledge age is creating a crisis of government, it is certainly true that our national institutions are facing some very serious questions.

There would appear to be three key challenges facing regional and national governments :

- (a) What governmental and institutional structures may be most appropriate in future ?
 - (b) If their conventional ‘tools’ for intervening in the economy are becoming less relevant, then what new types of interventions are required ?
 - (c) What ‘measurement’ tools are necessary to assess the effectiveness of these new types of interventions ?
- (a) *What governmental and institutional structures may be most appropriate in future ?*

The knowledge-based economy is typically characterised by an exponential increase in complexity. Many national governments are learning that the rise

and decline of key industries is shaped by many, complex, broad forces increasingly outwith their direct 'control'. These include the globalisation of trade and foreign direct investment, wider and more rapid diffusion of technology, improved transport and ICTs and the internationalisation of finance. As a result, economic development policy responses – and the governmental structures to manage them – have begun to change in recent years.

Economic policies are typically less about managing the redistribution of activities within national boundaries and more about facilitating effective regional or local responses to globalisation within a stable and favourable international economic environment. Increasingly, these depend on developing effective governmental structures at both a regional/local *and* a national or supranational level.

The notion of subsidiarity became popular in Europe during the 1990s – in other words, addressing issues at the most appropriate level. Parallel to this, we are witnessing the burgeoning of regional governmental structures which, in some parts of Europe, has been accompanied by the formal devolution of political power from the national to the regional level. It often seems to be the case that such regional structures, and associated regional policies and tools can provide more flexible responses to the challenges of the global economy.

However, regional policies still require an appropriate legal and institutional framework within which development can take place. A favourable climate for investment and a "level playing field" must be established for markets to function effectively. Historically, this has been the role of national governments but we are seeing an increasing role for supranational institutions (such as the EU, WTO and World Bank) and the transfer of some responsibilities to these from nation states. Indeed, Jean-Francois Rischard, World Bank Vice-President for Europe, has suggested that we may even need to develop even broader mechanisms : *"global public policy networks focused on 30 to 40 global issues that really matter, from global warming and fisheries depletion to the likes of financial market supervision and taxation in the information age"*.

But as national governments both decentralise power to regions as well as cede power to the supranational level this provokes the question : is the classical nation state still a suitable vehicle for politics and governance in the 21st Century ? If not, then how should it adapt ?

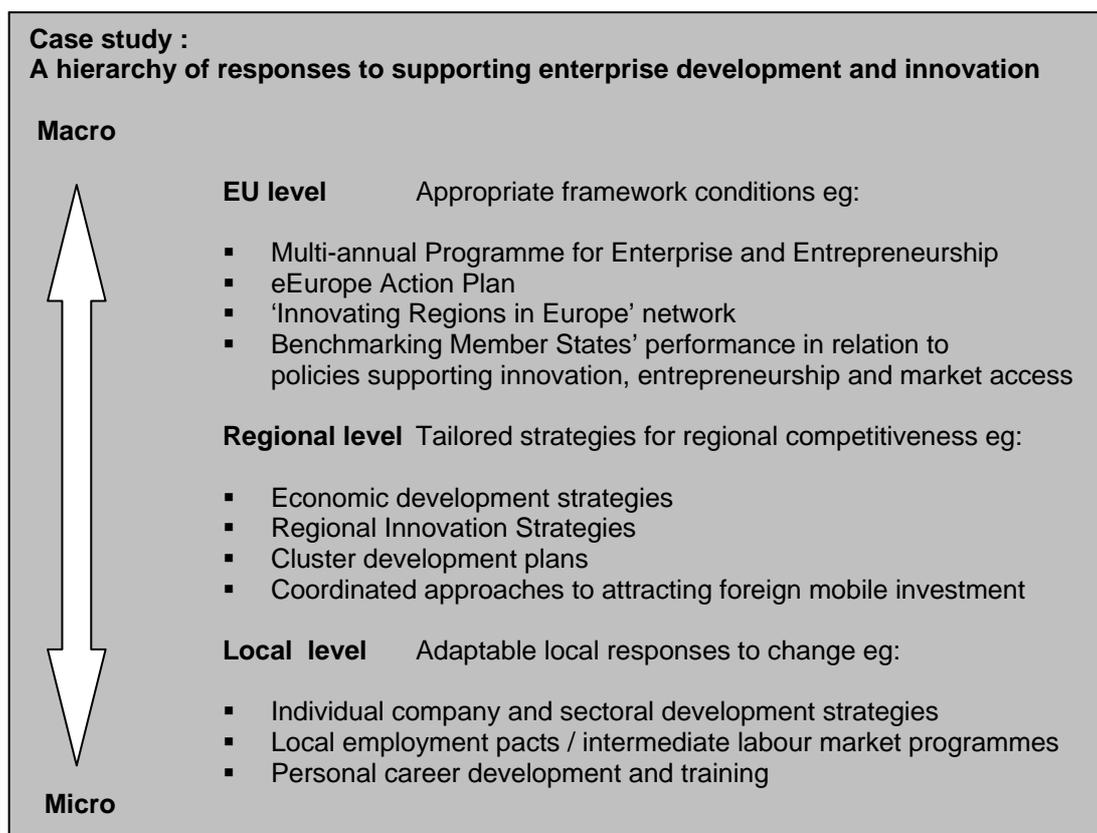
Not only are the levels at which economies are managed adjusting to respond to the complexity of the knowledge age but the very structure of public institutions is beginning to change also. Given the exponential increase in complexity of economic and social forces, public institutions can no longer afford to evolve only incrementally and linearly.

Indeed, it may be argued that many governmental structures are way past their "sell by" date. They tend to be extremely hierarchical, designed for the 'industrial world' where vertically-oriented Ministries worked independently to

develop plans for subordinates to follow. But some - following the lead of businesses - are pursuing a modernisation agenda and moving towards flatter, more agile knowledge-age structures which exploit the power of ICTs and turn people into empowered assets.

(b) *New tools for intervening in the knowledge-based economy :*

As national governments become less able to wield influence over and control macro-economic forces they tend to focus on establishing supportive framework conditions to allow regions, organisations and individuals to remain competitive. In turn, each develops their own tailored strategy to enable them to respond effectively to a range of macro- and micro-forces.



Approaches to enterprise and innovation development within the EU provide a good example. At the macro level EU enterprise policy concentrates on encouraging risk-taking and the development of a culture of enterprise. It also helps to build a dynamic enterprise environment and ensures that firms have effective access to markets. This allows regional enterprise strategies to focus on tailored responses to address particular threats or opportunities, such as regional clusters or bespoke packages of assistance to attract foreign direct investment.

Meanwhile, the proliferation of local (public-private-third sector) initiatives bring action closer to the grass-roots level and mobilise local people and agencies in partnership. Local employment strategies and employment partnerships provide tangible support within the context of the EU

employment strategy and the recent EC Communication, *'Acting locally for Employment'*. These help create local job opportunities through, for instance, promoting entrepreneurship, developing local services and introducing active labour market initiatives to connect excluded people to jobs and work experience in the labour market. Together, these help ensure that regions and neighbourhoods can maintain the flexibility and adaptability to prevent them becoming the victims of globalisation.

All of these types of interventions tend to share some similar characteristics :

- the importance of wide partnership and collaboration;
- holistic and long-term perspectives;
- an emphasis on empowering individuals and organisations to assume responsibility; and
- facilitation rather than direct delivery.

It is worth noting that economic development agencies are gradually adopting new roles to allow them to provide the right level and nature of support. Over the last twenty years or so we have witnessed a shift away from agencies whose business is to provide grants, build industrial property and attract foreign investment. Instead, they now focus on developing underlying infrastructure – skills and attitudes, public funding and transport frameworks, and collaborative networks – in order to facilitate development along other partners. Just as the issues faced in the knowledge-intensive, global economy tend to be increasingly complex, the approaches we need to deploy to address them need to be appropriate and sufficiently flexible.

(c) *Measuring the knowledge-based economy :*

If the economy now 'looks' very different than it did 20 or 30 years ago and the policies and tools we use to manage it are changing quite significantly, then it must surely be the case that our measurement methods must also change correspondingly. A glance through any newspaper or business magazine highlights this in stark terms : the headlines refer to "dot.coms", "knowledge management" and "intangible assets", yet the indicators of economic performance still relate to traditional metrics such as GDP and the price of gold and other commodities.

The Scottish Council Foundation's recent report "*The Scotland Index*", an attempt to identify new measures at a Scottish level, highlights the weaknesses of conventional measures :

"Many old assumptions no longer apply and need to be questioned. Take, for example, the growing unease about the usefulness of GDP as the dominant indicator of the health of a nation. GDP attempts to measure the total amount of cash transactions in an economy. This is all it does. GDP ignores the many useful economic activities where money does not change hands, or does not change hands officially (as in the shadow economy). Nor does it register inequality in the distribution of income and wealth or depletion of natural resources.

And it also includes the huge number of cash transactions that represent the costs of society's problems (for example, the costs of addressing crime, pollution and ill health). All in all, GDP is hardly an intelligent way of assessing how we are faring as a country, or of comparing ourselves with other countries. Yet it remains the lead measure of progress. We need something better."

From the perspective of an inclusive, knowledge-based economy we need to undertake further work in relation to two key aspects :

- to identify more appropriate measures of the knowledge-based economy; and
- to focus in particular on measures which attempt to measure not only economic wealth but the distribution of that wealth throughout society.

Scottish Enterprise is currently undertaking some work (see the case study below) in relation to both of these areas, as are the OECD and others, but this is an issue which requires more wider and detailed debate.

Case study – Tracking the Bigger Picture

The Tracking the Bigger Project is being developed by Scottish Enterprise and partner organisations to track the performance of the Scottish economy to help inform new policy development and monitor the progress of existing strategies. Specifically the project will :

- track socio-economic performance against a core set of indicators;
- assess national progress towards Scottish Enterprise's and partner organisations' strategic goals;
- compare Scotland's economic performance against other appropriate economies; and
- gain a wider understanding (and explanation) of absolute and relative trends in the Scottish economy to inform the development of future strategy.

The range of indicators to be monitored by the system is wide and covers three major 'themes' - Economy, People and Quality of Life/Environment. In this way as well as tracking traditional indicators (such as GDP or jobs), measures relating to an inclusive, knowledge driven economy will also be included, for example :

- R&D expenditure
- employees in high-tech/knowledge intensive sectors
- numbers of people in training and education
- e-commerce use and uptake
- number of university spin-outs
- patents registered with universities/research grants to universities
- households without a wage earner/below median earnings
- long term unemployment rates/differences across Scotland.

Conclusions

This paper has attempted to shed some light on the question vexing many European policy-makers and analysts : how to develop the most competitive and dynamic knowledge-based economy in the world in tandem with creating a culture of social stability and cohesion ? It is certainly a stiff challenge to meet.

Recent policy initiatives at EU, national and regional levels all demonstrate, however, that – in general – there is reasonable understanding of the nature of that challenge. The EU enterprise policy, eEurope and the forthcoming EC Communication *Towards a new European social agenda* all represent proactive ways of tackling the issue. They are positive steps in the right direction. But if there is any ambiguity around these policy responses it must surely indicate that there are still aspects of the challenge that are yet to be addressed adequately.

Questions of social cohesion, disparities in the distribution of income and unemployment still tax those focused on the growth agenda. The ability to compete within the more dynamic knowledge-intensive regions of Europe's centre still concerns the more sparsely-populated regions of the periphery. And organisations and Governments alike are urgently exploring ways to transform themselves to better connect with their customers and citizens.

Europe's regions are uniquely placed to address these questions and to make the goal of an inclusive knowledge-based economy a reality. Having defined the challenge a little more clearly the task now must be to work together to make it happen.

References

R. Brown (2000) "Cluster dynamics in theory and practice with application to Scotland" (Regional and Industrial Policy Research Paper, European Policies Research Centre, University of Strathclyde).
<http://www.eprc.strath.ac.uk/eprc/publicat.htm>

Council of the European Union (2000) "Presidency Conclusions : Lisbon European Council 23-24 March 2000"
<http://ue.eu.int/presid/conclusions.htm>

Council of the European Union (2000) "Employment, economic reforms and social cohesion – towards a Europe based on innovation and knowledge" (Document from the Portuguese Presidency, 12 January 2000).
http://www.portugal.ue-2000.pt/uk/docmne_main02.htm

Department of Trade and Industry (2000) "We can make it" (Consultation document of the Foresight Manufacturing 2020 Panel)
<http://www.foresight.gov.uk>

European Commission (2000) "Europe's net generation – Catching up with the US ? European Commission launches new strategy for jobs in the knowledge economy" (Press Release IP/00/119 7 February 2000)
http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/00/119|0|AGED&lg=EN

European Commission (2000) "Social trends : Prospects and challenges" (Commission Communication COM(2000)82final)
http://europa.eu.int/eur-lex/en/com/pdf/2000/com2000_0082en01.pdf

European Commission (2000) "Building an inclusive Europe" (Commission Communication COM(2000)79final)
http://europa.eu.int/eur-lex/en/com/pdf/2000/com2000_0079en02.pdf

European Commission (2000) "eEUrope : An information society for all" (Progress Report to the Special European Council, Lisbon)
http://europa.eu.int/eur-lex/en/com/pdf/2000/com2000_0130en01.pdf

European Commission (2000) "eEurope 2002 : An information society for all" (Draft Action Plan prepared for the European Council, Feira)
http://europa.eu.int/eur-lex/en/com/pdf/2000/com2000_0330en01.pdf

European Commission (2000) "Challenges for enterprise policy in the knowledge-driven economy" (Multiannual Programme for Enterprise and Entrepreneurship 2001-2005)
http://europa.eu.int/comm/enterprise/enterprise_policy/mult_entr_programme/doc/com2000_0256en.pdf

T. Friedman (1999) "The Lexus and the Olive Tree : Understanding globalization"

A. Grimes and S. Maxwell (1997) "Redefining the social economy : the voluntary sector in the Scottish economy" (Scotland Europa Occasional Paper No.12)

<http://www.scotlandeuropa.com/DOWNLOAD/paper12.doc>

G. Hassan and C. Warhurst (1999) "A different future – A modernisers' guide to Scotland"

E. Keep (2000) "Upskilling Scotland" (New Horizon report published by the Centre for Scottish Public Policy, Scottish Council Development and Industry and the University of Strathclyde).

E. Kelly (2000) "The Future of the Consumer" (Presentation to Scottish Enterprise Network staff, 14/2/2000).

K. Kelly (1998) "New rules for the new economy"

E. Liikanen (2000a) "A strong e-economy for all in Europe" (Speech to the e-agenda business seminar, 23 February 2000)

http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/00/55|0|AGED&lg=EN

E. Liikanen (2000b) "An information society for all : Progress report for the Lisbon European Council" (Presentation slides)

http://europa.eu.int/comm/information_society/speeches/liikanen/index_en.htm

E. Liikanen (2000c) "Enterprise policy : Priorities and perspectives" (Speech to the Committee of the Regions, 30/6/2000)

http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/00/252|0|RAPID&lg=EN

OECD (2000) "Devolution and globalisation – Implications for local decision-makers" (Issues paper for OECD international conference held in Glasgow, February 2000)

<http://www.oecd.org/tds/speeches/glasgowspeech.htm>

B. Pine and J. Gilmore (1998) "Welcome to the experience economy" (Harvard Business Review July-August 1998)

<http://www.hbsp.harvard.edu/products/hbr/julaug98/98407.html>

J-F Rischard (2000) "The new world economy and global governance" (Speech in Glasgow).

A. Saxenian (1994) "Regional advantage : culture and competition in Silicon Valley and Route 128"

Scottish Council Foundation (1998) "The intelligent economy : Culture, value and competitiveness"

http://www.scottishpolicynet.org.uk/scotpol/scf/publications/paper_6/frameset.shtml

Scottish Council Foundation (1999) "The Scotland index"
http://www.scottishpolicynet.org.uk/scotpol/scf/publications/paper11_summ/frameset.shtml

Scottish Enterprise Network (1998) "The Network Strategy"

The Scottish Office (1998) "Opportunity Scotland – A paper on lifelong learning"

<http://www.scotland.gov.uk/library/documents-w1/lllqp-00.htm>

The Scottish Office (1999) "Skills for Scotland"

<http://www.scotland.gov.uk/library/documents-w7/sfs-00.htm>

The Scottish Executive (1999) "Scotland : Towards the Knowledge Economy – Report of the Knowledge Economy Taskforce"

<http://www.scotland.gov.uk/library/documents-w9/knec-00.htm>

The Scottish Executive (2000) "Created in Scotland – The way forward for Scottish manufacturing in the 21st century"

<http://www.scotland.gov.uk/library2/doc12/cis-00.asp>

UK Government Office of the Prime Minister (2000) "UK-Belgium joint statement on preparation for the Lisbon Special European Council"

<http://www.number10.gov.uk/news.asp?NewsId=580&SectionId=33>



www.scottishenterprise.co.uk



REGIONE DEL VENETO

Sede di Rappresentanza di Bruxelles



Scotland Europa Papers

- Paper No. 1
March 1995
EUROPE'S REGIONS: Engines Or Millstones?
Charlie Woods; Chief Executive, Scotland Europa
- Paper No. 2
July 1995
THE STRATHCLYDE EUROPEAN PARTNERSHIP
Laurie Russell; Director,
Strathclyde European Partnership
- Paper No. 3
Dec. 1995
REGIONAL POLICY FROM A NORDIC PERSPECTIVE
Mårten Johansson; Project Manager, NOGRAN
- Paper No. 4
Feb. 1996
**GLASGOW WORKS:
Helping the long-term unemployed get back to work**
Ken Wardrop; Glasgow Development Agency
- Paper No. 5
March 1996
THE IGC: A Challenge for Europe
Fraser Cameron; DG I, European Commission
- Paper No.6
June 1996
**ENERGY AND THE ENVIRONMENT:
A review of policy developments within the EU and
its member states,**
Alex Brennan; Scottish Power,
Ben Duncan; Scotland Europa
- Paper No. 7
Sept. 1996
EUROPEAN CHALLENGES: Scotland
Gavin McCrone
- Special Paper
April 1996
LEARNING FROM SCOTLAND
The Scotland Europa Education and Training Group
- Paper No. 8
Sept. 1996
**PUBLIC SERVICE OBLIGATIONS IN A COMPETITIVE
ELECTRICITY MARKET**
Ben Duncan; Barrister at Law
- Paper No. 9
Oct. 1996
**THE IMPACT OF THE STRATHCLYDE INTEGRATED
DEVELOPMENT OPERATION 1988-1992**
Laurie Russell; Strathclyde European Partnership Ltd;
John McCreadie; Consultant EKOS Ltd, Glasgow
- Paper No. 10
March 1997
**THE GOVERNANCE OF EUROPEAN STRUCTURAL
FUNDS:
The experience of the Scottish Regional
Partnerships;**
MW Danson, J Fairley, MG Lloyd, I Turok
- Paper No. 11
April 1997
**PROMOTING EUROPEAN COHESION AND
PROSPERITY INTO THE 21ST CENTURY: A Scottish
Contribution to the Reform of the EU's Structural
Policies;**
Charlie Woods; Chief Executive, Scotland Europa

- Special Paper
May 1997 **MEETING THE CHALLENGES OF SUSTAINABLE DEVELOPMENT IN SCOTLAND: A Partnership Approach;**
The Scotland Europa Environment Group
- Paper No. 12
Nov 1997 **REDEFINING THE SOCIAL ECONOMY:
The voluntary sector in the Scottish economy**
Alistair Grimes, Community Enterprise in Strathclyde
Stephen Maxwell, Scottish Council of Voluntary Organisations
- Paper No. 13
Nov 1998 **COMMUNITY DEVELOPMENT AND HIGHER EDUCATION:
Case Study of The University of the Highlands and Islands**
Professor Brian Duffield and Professor Sir Graham Hills
- Paper No. 14
May 1998 **THE EURO - How Can Scotland Face Up to the Challenge?**
Irene Oldfather, North Ayrshire Council and UK delegation to Committee of the Regions
- Paper No. 15
April 1999 **REGIONAL PARTICIPATION IN EU AFFAIRS:
Lessons for Scotland from Austria, Germany & Spain**
Aileen McLeod, Strathclyde University
- Paper No. 16
April 1999 **REGIONAL INNOVATION STRATEGY – Western Scotland**
Michael Kearns, Strathclyde European Partnership
- Paper No. 17
June 1999 **EUROPE’S EMPLOYMENT STRATEGY:
Implications for Scotland**
Kirsty Macdonald, Development Executive, Scotland Europa
- Paper No. 18
September 1999 **THE SCOTTISH EXPERIENCE OF PREPARING AND IMPLEMENTING STRUCTURAL FUND PROGRAMMES**
Adrian Colwell, CoSLA
Gordon McLaren, East of Scotland European Partnership
- Paper No. 19
July 2000 **TOWARDS AN INCLUSIVE, KNOWLEDGE-BASED ECONOMY: SOME EXPERIENCES AND CHALLENGES FROM A EUROPEAN REGIONAL PERSPECTIVE**
Ewan Mearns, Scottish Enterprise

Also Available:

**Scotland Europa guide to
“The Fifth Framework Programme on Research and Development”**

March 1999

Dr. Andy Furlong, Glasgow University

Scotland Europa Membership

Subscribers

Association of Scottish Colleges
British Energy
British Regional Airlines Ltd
BT
Committee of Scottish Higher
Education Principals
East of Scotland Water Authority
Electricity Association
Euro-Info Centre
Glasgow Caledonian University
Industry and Power Association
Local Enterprise Companies
North of Scotland Water Authority
Saltire Public Affairs
Scotch Whisky Association
Scottish Chambers of Commerce
Scottish Council (Development & Industry)
Scottish Council for Educational Technology
Scottish Council for Voluntary Organisations
Scottish Design
Scottish Enterprise

Scottish Environment Protection Agency
Scottish Financial Enterprise
Scottish Homes
Scottish Food and Drink Federation
Scottish Qualifications Authority
Scottish Tourist Board
Scottish Natural Heritage
Sea Fish Industry Authority
Stevenson College
STUC
Strathclyde European Partnership
The Wise Group
The Robert Gordon University
University of Aberdeen
University of Abertay Dundee
University of Edinburgh
University of Glasgow
University of the Highlands and Islands
University of Paisley
University of Strathclyde
West of Scotland Colleges' Partnership
West of Scotland Water Authority

Residents

Baltic 7 Brussels Office
Bradley Dunbar Associates
British Energy/EEPS
CoSLA
Dublin Regional Authority - Údarás Réigiúnda Átha Cliath
East Finland European Office
East of Scotland European Consortium
Edinburgh's Telford College
European Biomass Industries Association
Eurodesk Brussels Link
Highlands & Islands European Partnership
Maclay Murray & Spens
POLIS
Scottish Executive EU Office
Storstrøm Region EU Office (Denmark)
West of Scotland European Consortium
UK Electricity Association

Affiliate Members

City of Oulu
Region of Northern Ostrobothnia

SCOTLAND EUROPA ★

Scotland House Rond-Point Schuman 6 B-1040 Brussels T +32 (0)2 282 8315 F +32 (0)2 282 8300

Also at: Scottish Enterprise 5 Atlantic Quay 150 Broomielaw Glasgow G2 8LU T +44 (0) 141 248 2700 F +44 (0) 141 228 2114

W www.scotlandeuropa.com E information.desk@scotent.co.uk