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Task 3.1 Mini Studies

Mini Study 04 – Innovation Culture
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Executive Summary

This mini-study examines the topic of Innovation and Culture. It is a commonplace observation that some cultures seem to be particularly productive for, or receptive of, innovation. But what does this really mean?

The mini-study begins by clarifying what we mean by culture here – not culture in the sense of taste, style or media, but in terms of attitudes, values, and the meanings attached to institutions and practices. We have to explore different elements of innovation too, the various features of invention, commercialisation, diffusion and implementation. This helps us explore a range of different research literatures that deal with various features of the Innovation-Culture relationship.

One such literature deals with entrepreneurship – something that is known to vary considerably across different societies. Entrepreneurs are not always promoting innovations – it seems that only a minority are doing so, and most of these are relatively minor innovations – and innovations may be promoted by other actors (large firms, the public sector, and so on). But entrepreneurship and associated risk-taking propensities clearly play significant roles in some contexts, and the mini-study explores some key issues here. It then moves on to more general public and consumer attitudes, where we outline data on attitudes to innovation across Europe and more widely, and explore the interesting work conducted on “risk society” and “postmaterialism” – what ideas have been developed and what the implications are for innovation. Several further points of distinction are made in this context: attitudes to specific innovations may vary dramatically; culture may better be seen as *shaping* innovation rather than just accelerating or slowing it; and innovation *processes* are shaped as well as specific innovations and their adoption. We later discuss how such work relates to innovation systems analysis, suggesting that culture needs to be seen as part of the innovation system.

Another body of work deals with culture in specific geographical contexts, in particular cities. There has been a great deal of interest in “creative cities” and what underpins these. Despite a number of weaknesses in the literature, there are strong arguments that cultural features of cities can foster generation and adoption of innovation, and there are interesting efforts to specify policy actions that can help promote this.

Organisational and management researchers have approached firms in much the same way, arguing that the culture of firms can be more or less conducive to innovation, and that it is possible to identify enabling factors and strategies that managers can follow to build such cultures. As in the other topics considered, the issue of culture emerges as a multifaceted one, where many dimensions may need to be considered. There will rarely be a one-to-one relationship between any one element of culture and the innovative outcomes for organisations (or for cities or economies).

In concluding the mini-study, this is one of the main points to reiterate. We stress that changing culture is an ambitious goal, and that sometimes the task will be to work with and build on existing culture. But the literature does point to some strategies for effecting some sorts of change, and we can provide pointers to helpful ideas here.

Table of Contents

1.	INTRODUCTION.....	4
1.1	WHAT CULTURE IS AND IS NOT	4
1.2	CULTURE AND INNOVATION.....	7
2	NATIONAL, REGIONAL AND LOCAL CULTURE AND INNOVATION.....	10
2.1	CREATING AND RESPONDING TO INNOVATION	10
2.1.1	Entrepreneurship.....	10
2.1.2	Consumers and Innovation	14
2.2	SOME CURRENT APPROACHES TO ATTITUDES AND VALUES.....	18
2.2.1	The “Risk Society”	18
2.2.2	“Postmaterialism”	21
2.3	ATTITUDES AND VALUES IN SPATIAL CONTEXTS.....	24
2.3.1	THE POST-MATERIALIST SHIFT AND NATIONAL DIFFERENCES.	24
2.4	THE SUB-NATIONAL CONTEXT; THE CREATIVE CITY	26
2.5	RULES AND REGULATIONS IN SPATIAL CONTEXTS	35
2.5.1	Culture and Innovation Systems	35
2.5.2	Regulations and Cultures	36
3	ORGANISATIONAL CULTURE AND INNOVATION	40
3.1	ATTITUDES AND VALUES IN ORGANISATIONS	41
3.2	RULES AND REGULATIONS IN ORGANISATIONS	43
3.2.1	Structure.....	46
3.2.2	Strategy	47
3.2.3	Communication.....	47
3.2.4	Creativity versus Innovation	48
3.2.5	Open Innovation	49
4	FOSTERING A CULTURE OF INNOVATION.....	51
4.1	POLICY RECOMMENDATIONS: EU, NATIONAL AND REGIONAL	51
4.2	MANAGEMENT ISSUES	ERROR! BOOKMARK NOT DEFINED.
4.3	RECOMMENDATIONS FOR FURTHER WORK.....	ERROR! BOOKMARK NOT DEFINED.
5	BIBLIOGRAPHY	55

The Culture of Innovation

1. Introduction

“Culture” and “innovation” are both big words. Thus we need to begin by specifying what we are looking at in this study, and establish a framework for organising what is a very poorly integrated body of work – and one that is often dominated by assertions and anecdote rather than by recourse to empirical evidence. Though accepting that anecdotes can be telling, and that some assertions may well be accurate, we will attempt to focus on work drawing on a solid evidence base of surveys and case studies.

Before discussing what the two terms mean, let us begin with an apparently simple piece of argumentation: we can label this ASSUMPTION A (see [Box 1](#)). We shall return to this assumption, but let us unpackage two of the key elements – culture and innovation.

Box 1: ASSUMPTION A

Cultures differ in their willingness to foster and accept innovations. This difference is a major factor in the variations in innovativeness, and thus the competitiveness, of different countries and regions, on the one hand, and different organisations, on the other.

1.1 What Culture is and is not

First, let us be clear that we are not using “culture” in the sense that became widely established in the eighteenth and nineteenth centuries, as referring to style and taste – as in “a highly cultured gentleman”. This sort of culture has become the subject of considerable sociological debate following the publication of Bourdieu’s pioneering book on taste and distinction. It also attracts a great deal of strong emotion (see [Box 2](#) for a well-known example).

Box 2: A Notorious Quotation

"When I hear the word culture, I reach for my revolver."

(Often attributed to Göring, but, according to Wikiqotes, this is derived from: "*Wenn ich Kultur höre ... entsichere ich meinen Browning!*" translated as “Whenever I hear of culture... I release the safety-catch of my Browning!” (Act 1, Scene 1 in the play *Schlageter* by Hanns Johst - first performed in April 1933 for Hitler's birthday).

This is marginally relevant to our study so let us rapidly elaborate. Since “being cultured” is a matter of exercising good taste, under some circumstances this good taste may be a matter of accepting or rejecting innovations of particular types. Good taste is generally defined as the taste of the cultural elite, which typically is taste that demonstrates one’s intellectual and economic resources, or one’s lineage (since culture is often the last refuge of gentlefolk of restricted means). The “cultured

person” will sometimes reject innovations that commodify artefacts and services, preferring to stay with goods and services that reflect artisanal craft. The “cultured person” will sometimes adopt advanced and superior technologies and tastes (in arts and cuisine, for example) which are, at least for the time being, hard for the masses to adopt. Two interesting lines of study have emerged in recent years:

- The role of “cultural elites” in pioneering new ways of life and the innovations that these may be associated with. Elites can form a lead market for innovations, pioneering new products and practices before they become cheap and familiar enough for wider acceptance.
- The erosion of classic notions of “high culture” as signifying superior status, and the rise of such ideas as “omnivorous consumption” (showing one’s own taste by being experienced with all sorts of tastes, from all round the world), the “avant garde” (embracing modernity and its pioneers), and openness to experimentation in general.

Box 3 provides a little more information on these themes. But the main focus of this study on Innovation and Culture will be on a different set of meanings of culture.¹ While there is much debate about the term across social sciences (especially anthropology), we suggest that a common thread to most discussions centres on culture as involving aspects of social life that go beyond the purely economic and political dimensions (production and exchange of goods and services, acquisition and exercise of political authority and power). These aspects of social life are the symbolic structures which human beings use to render their experiences meaningful and ordered. This includes their economic and political experiences, as well as other experiences – social relationships, entertainment, and more. Attitudes to risk and entrepreneurship, novelty and tradition, conformity and transgression, are among the features of culture that will obviously bear upon innovation. “Attitudes” – and the related idea of “values”, that may be thought of as the deeper symbolic structures from which attitudes about more immediate experiences are generated – are often thought of as matters of individual psychology. But the ways in which attitudes are formed and communicated, and values and cultural judgements are embodied in material artefacts and in rules and regulations, are inherently social and transpersonal.

“Culture” can be understood and approached in many ways, then. The different meanings of culture can even overlap. Later we shall examine research on creative cities – those whose culture allows creative classes to flourish, in one formulation. And part of this cultural framework is the availability of culture in the other sense – the cities are attractive because they offer cultural facilities (art shows, museums, live theatre and music etc.) and have a vibrant population of cultural workers (in this sense). The discussion will hopefully make it clear which sense of the term we are using when we are addressing such issues.

¹ A metasearch engine search - <http://clusty.com/search?query=culture> – came up with around 250 million hits on “culture”, which it grouped into several dozen clusters. Many of these are irrelevant (“tissue culture”), but many are telling – there are numerous national cultures cited, various government ministries of culture, and phrases such as “corporate culture”, “traditional culture”, “culture shock”, and the like. A search on “innovation culture” retrieved c 16000 hits, again with many interesting clusters – “building innovation cultures”, “innovation culture in libraries”, and more.

Box 3: Cultural Elites and Omnivores

The classic view was that consumption patterns are very much determined by social class, with more affluent classes preferring “high culture” – in part reflecting their education and socialisation, in part a display of taste more becoming than conspicuous consumption of material goods. But as class has become more complicated, so new elites have emerged – for example “nouveaux riche” and celebrities from fashion, arts, business, sport and more. Elite consumption may be a demonstrator or lead market for future mass consumption.

But there may also be changes taking place in consumption practices more generally. One influential argument is that ‘omnivorousness’ is growing in advanced industrial societies. In particular, some social groups enjoy and participate in a greater variety of forms of culture than previously. Some of these are elements of world culture (e.g. “world music”, appreciation of East Asian cinema, comics, videogames, cuisine from all regions) and some will have been the preserve of subcultures (sporting activities, different hobbies, and so on). This acceptance of more cultural inputs is seen as reflecting and reinforcing tolerance and related values. It also may be seen as undermining snobbery, in that taste is no longer signified merely by appreciation of traditional “high arts”, and popular and ethnic art forms are openly enjoyed by cultural elites and more of the general population. However, since omnivorous taste may require expenditure of time and money in travel, expensive meals and holidays, acquiring correct vocabularies, and so on, there may be new forms of snobbery emerging, too. Knowing about sushi and ragas may become a focus of snobbery to rival that around appreciation of Wagner and Shakespeare.

Studies in several countries have yielded similar results, indicating that higher levels of education and higher status jobs incline people more to omnivorous patterns of consumption (Peterson, 1992, 1997, 2004). But there are dissenters from this apparent consensus. Warde *et al* (2007) explored from UK survey research on cultural participation. They concluded that there is wide cultural participation within the UK, but that “omnivores” are less distinctive than is claimed by proponents of the omnivorousness thesis.

Another concept is “voraciousness” (e.g. Sullivan and Katz-Gerro, 2007), which stresses the “sampling” of many cultural products rather than deep immersion. Implicit is the idea that people are becoming more able to try out different consumer goods and services, but have less time to devote to them. The time that is available needs to repay the expense and effort put into it. The voracious consumer may not participate in depth in large numbers of activities; instead he or she is sampling and switching among different activities. In terms of innovation, we have consumers who are prepared to try out many products, but who may require very user-friendly services that provide rapid gratification.

We can talk of the cultures that are characteristic of just about any grouping of human beings. The grouping may be geographical (and/or political) – a nation, a region in a nation, a city, and so on. It may be economic – while it is unusual (though not unknown) to talk of an economic sector’s culture, a cluster or network of economic actors may well be said to have a particular culture. It may be a matter of social categorisation (e.g. socioeconomic and/or ethnic categorisation), referring to the culture shared by individuals, and/or expressed by representative organisations of particular communities, such as a social class, an ethnic group, or even professions – and, of course, gender and age groups. (“Youth culture” is a very common English phrase). It may be a matter of a type of organisation (e.g. “corporate culture”) or of a particular organisation (“this firm has a caring culture”).

For the purposes of this study, we will focus mainly on the two dimensions that have attracted most attention, at least in the context of innovation:

1. First is the “spatial” dimension: culture as it pertains to nations, regions and city-regions (including the “clusters” that may exist within these areas). This will include issues such as the readiness of markets to adopt innovations, in addition to the amount of creativity and innovative activity underway in the spatial area.
2. Second is the organisational dimension, especially as it pertains to economic organisations: what do we know about corporate, small business, and public sector culture as they bear on innovation.

We shall only touch in passing on other dimensions – though these could be interesting for future work (e.g. how some diasporic immigrant communities are highly entrepreneurial and innovative, and what sorts of social capital and socioeconomic insertion fosters this –see [Box 4](#)).

1.2 Culture and Innovation

Cross-cutting the two dimensions mentioned above, there are various elements of culture, and various elements of innovation, that might be focused on. Indeed, various researchers and commentators have emphasised one or other set of elements. Broadly, we can see that there is discussion on:

1. Values and attitudes among the members of the areas or organisations – for example, their willingness to take one or other sort of risk, their assumptions about whether choices should be a matter of individual responsibility or collective provision.
2. Rules and routines, and the networks and more formal institutions within organisations and areas, which can also be studied as representations of culture. These may range from such things as systems for collecting and rewarding creative ideas from a workforce, to rules governing the treatment of bankruptcy or the introduction of new pharmaceuticals.

As this discussion suggests, there are also different ways in which the innovation process may be influenced by cultural factors. We can think, rather simplistically, of the innovation process as involving two broad types of activity. These are:

- The **creation** of new ideas, and the embodiment of these ideas in new products and processes. (This includes the “stages” of invention/discovery, development/design, and exploitation/commercialisation.)

- The **adoption** of these new products and processes, and their incorporation into modified working and living routines. (This includes the stages of diffusion and implementation.)

Box 4: Ethnicity, Immigration and Innovation

A common worry about immigration is that newcomers are taking “our jobs”, as if there is a fixed amount of work that needs to be accomplished (this is the “lump of labour fallacy”). But across many Western economies, rates of self-employment are generally found to be higher among the foreign-born than among natives, and there is evidence suggesting that self-employment among immigrants is increasing (van Tubergen, 2005).

Much of this self-employment is providing basic consumer services (often to other members of an immigrant community; often food and other “exotic” cultural services; and often low-wage family employment in retail). But immigrant culture can play a vital role in more innovative and even high-tech activities. Thus Saxenian (2006) reports that Indian or Chinese entrepreneurs founded or co-founded almost a third of the start-ups in Silicon Valley during the late 1990s. This may be taken as evidence of the vitality of Indian and Chinese cultures (and their University systems) where it comes to IT innovation. Equally, it can be interpreted as showing that the Silicon Valley culture was attractive, providing these creative individuals with opportunities that they lacked in their cultures of origin.

Finally, cultural “hybridism” can be important, with second- and third-generation immigrants creating fusions between their cultures of origin and host cultures. “Fusion foods” and music are obvious examples – the Shimla Pink restaurants, bhangra music, and so on. There can be cross-pollination between immigrant cultures, with the “balti” curry representing a fusion of Indian cuisine with South-East Asian cooking methods (using the wok). Examples based upon more advanced technology are probably fewer, but it would be worthwhile locating these. One might be the use of the “Electronic Village Hall” scheme in Manchester, UK. This scheme was intended to make computer-communications available to various disadvantaged groups (in the period before the take off of the Web), and the outstanding success story was the one case on an immigrant community. Bangladeshis adopted the systems enthusiastically to maintain contact and particularly to support business requirements in restaurants and other sectors.

Of course, different immigrant groups possess very different social capital and skills, and cultural predispositions more or less similar to those of the host community. There are bound to be variations in their entrepreneurial and innovation activities. Some of the “creative city” literature examined later raises questions about how cities may maximise the contributions of immigrants to creativity and innovation

The division is simplistic in that it fails to address many of the points raised in the critique of the so-called “linear model” of innovation. There are, as this critique asserts, close inter-linkages between the two broad types of activity. User demands can shape invention and development. There are important phenomena of “reinvention” (where users “invent” new applications for products, often completely different from those foreseen by the original inventors) and “configuration” (where systems integrators or users themselves combine a host of new products to create a system that may be in many ways unique).

The nature of **innovation** requires further unpackaging. Innovations and innovation processes are not all the same. Some innovations, for instant, are incremental changes only, while others represent radical and even revolutionary transformations. Some innovation processes follow the classic linear model with Research followed by Development followed by commercialisation and diffusion; some have little formal R&D and instead may be made in the course of service delivery, by users configuring new equipment, or by highly creative individuals in whatever organisations are involved.

New Information Technology (IT) has by and large been uncontroversial (there have been localised concerns about unemployment from automation, about dangers associated with inappropriate content and malevolent use of information). In contrast, innovations involving biotechnology have been much more controversial, especially where these impact upon foods, farms, and the environment (GMOs, for example) or involve the sorts of bioethical questions associated with stem cells and certain reproductive interventions. It looks as if there are different responses to broad classes of innovation related to the sorts of knowledge and interventions in the natural and social orders that they imply. Furthermore, there are suggestions that responses will also vary according to the types of application involved – military-related innovations are liable to be less popular than health-related ones, for instance. ASSUMPTION A may be problematic in terms of suggesting a general cultural propensity to accept/reject innovations. Particular innovations may meet with different reactions in different cultures. The obvious example is the US resistance – at least from the national government – to stem cell technology (based on embryonic tissues), as compared to the supposed openness of US culture to innovation in general.

It is quite possible that there are underpinning attitudes towards “innovation in general”, but the likelihood is that these are mediated by other attitudes and values concerning dimensions that these innovations are entangled with, so that particular innovations may be responded to in quite specific ways. Likewise, there may be variations in response to particular innovation processes – we could imagine that support for creative individuals and small firms may diverge from that for large corporations, for example – or that innovation processes based in other countries or organisations may be looked on with disfavour. In the UK, the phrase “not invented here” is used to describe a source of resistance to innovations seen as deriving from outside the organisation in question.

Yet another issue arises. Attitudes to innovation are more complex than simple acceptance/resistance. At the very least, we could specify three perspectives, corresponding to the “moving toward”, “moving away” and “moving against” account that comes from psychology. These are:

- Rejection – unwillingness to accept an innovation, either in terms of one’s own use of it or as a result of others’ use impinging upon one’s own practices.
- Resistance – unwillingness to allow the existence of the innovation, which may be manifested in campaigning against it.
- Acceptance – willingness to accept an innovation – at one extreme enthusiasm, and at the other at least to tolerate on the part of others. We might even distinguish a fourth perspective, representing that of proponents of an innovation – the point of view that will seek to promote the particular innovation or some more general trajectory of innovation.

Some innovations may simply engender acceptance and rejection, with some members of the culture being prepared to work on or adopt the innovation, and others displaying disinterest. Other innovations may provoke more resistance, with opposition to the particular new product, and even to the complex of knowledge or effects believed to be implied by this and similar products. The implication is that ASSUMPTION A will need to be elaborated to deal with such complexities, as we shall see later.

2 National, Regional and Local Culture and Innovation

2.1 *Creating and Responding to Innovation*

2.1.1 Entrepreneurship

Much of the discussion around US/EU variations in performance is constructed around the notion that the US is characterised by high levels of entrepreneurialism: that it is easier to, and people are more motivated to, start innovative new firms in the American context.

A major source of information on cross-national variations in entrepreneurship is the Global Entrepreneurship Monitor (GEM), which presents many reports and publications at <http://www.gemconsortium.org/>. A particularly useful resource is GEM’s Annual Summary Results. The GEM 2006 Summary Results (Bosma and Harding, 2006), defines two key groups which together constitute “early-stage entrepreneurial activity”:

- **Nascent entrepreneurs** are defined by (a) having taken some action towards creating a new business in the past year (the business must not have paid any wages or salaries for more than three months), and (b) expecting to own a share of this business.
- **New business owners** - active owner-managers of other new businesses – these will have paid wages or salaries for more than three months, but for less than 42 months (so they are 3½ years old at most).²

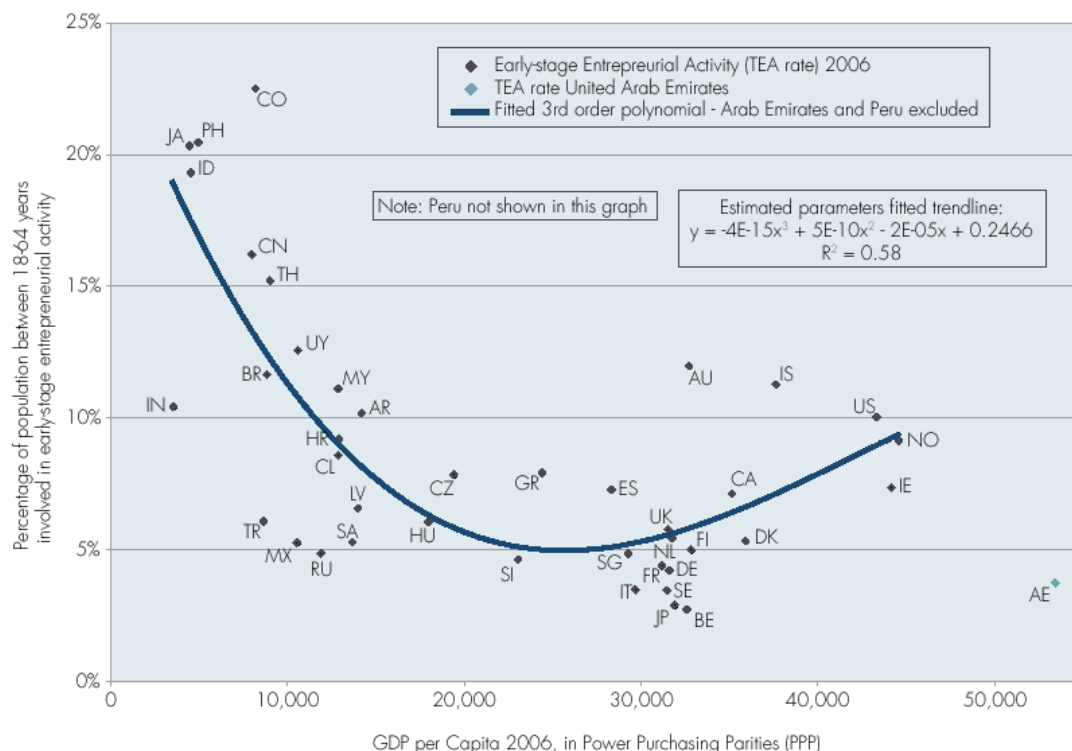
The level of “early-stage entrepreneurial activity”, the share of the population belonging to these two groups, is seen as an indicator of the country or region’s “dynamic entrepreneurial propensity” – how far the population is willing and able to pursue such ventures. The GEM2006 study presents results suggesting that

² Another group of interest is **established business owners** - who own and manage a business that has paid wages or salaries for more than 42 months, which GEM authors see as being indicative of the percentage of the population actively involved in running commercially sustainable businesses.

“necessity-driven” entrepreneurship tends to decline in importance, and “opportunity-driven entrepreneurship” to rise, as countries become more affluent.

Figure 1 reproduces some telling results from recent GEM analyses, relating early-stage entrepreneurship to the level of economic development indexed by per capita GDP levels.

Figure 1: Early-Stage Entrepreneurial Activity Rates and GDP Per Capita, 2006



Note:
Fitted 3rd order polynomial - Arab Emirates and Peru excluded; PPP-corrected GDP levels are taken from the IMF’s World Economic Outlook Database (October 2006)

Source: (Bosma and Harding, 2006)

There is a striking relationship between the two variables. At low levels of economic development, it is typical to find a large share of very small enterprises in the structure of the economy. Industrialisation tends to see the rise of larger (and longer-established) firms, catering to growing markets, and providing more employment opportunities. (Perhaps we also see the effect of the demographic transition here, too, with fewer young people coming into the labour market and pursuing the jobs there available.) But at higher levels of income still, the entrepreneurial sector begins to increase its share once more. There are several likely factors for this:

- With greater affluence, there is some shift from mass consumption to more differentiated consumer needs. It may be hard for large firms to meet these needs, despite the claims about the growth of “mass customization”. Indeed, the theories about consumption discussed earlier may mean that some consumers prefer to “buy local”.

- Similarly growing demand for services may provide opportunities for new small firms, since many (not all!) services require less in the way of investment and infrastructure than do most manufacturing plants.
- Like many consumer services, many of the new technology activities that are appearing also have relatively low start-up costs, requiring little more than a PC, Internet connection - and both creative and technical skills.
- Growing numbers of individuals have the wherewithal to risk going into business for themselves, and perhaps they have some reassurance about a safety net of social welfare provision being available should they fail.
- Political factors may also foster the emergence of new small firms, as governments promote this sector either as a more or less short-term way of reducing unemployment, or as a longer-term solution to problems of job creation.³

Beyond these large trends, there is doubtless a range of what the GEM authors call “the demographic, cultural and institutional characteristics of each country” that affect entrepreneurialism – and presumably account for the scatter of countries around the trend line. Some high income countries are very low in terms of early-stage entrepreneurial activity. This applies to many EU countries – especially Belgium, at 2.7%. Japan is also low and well below the trend line, even though it is not usually thought to be technologically conservative (if some cultural practices may seem conservative to Europeans). However, there does seem to be a trend for countries with very high levels of per capita to display increasing levels of early-stage entrepreneurial activity. And the US, Israel and Australia seem to be well above the trend line, while EU countries are generally at or below it (notable exceptions being Greece, Spain and the Czech Republic). The likelihood is that there are variations in national culture that lead to encouragement or discouragement of entrepreneurship.⁴ But these studies offer only tantalizing glimpses as to what these might be. It is interesting to note that both Japan and Finland have low levels of entrepreneurial activity yet both countries are widely perceived to be highly innovative. This suggests that although entrepreneurial behaviour is a useful indicator of innovative activity it is not the only type of innovative activity that matters and countries with low numbers of entrepreneurs are engaging in successful innovative behaviour. This issue is further discussed in Section 3 – Organisational Culture and Innovation.

³ MacDonald and Coffield (1991).

⁴ There is also some work suggestive of regional variations in culture within countries – even those countries with relative homogeneity and shared values. In a study of variations in new firm formation across regions in Sweden, Davidsson and Wiklund (1995) concluded that – despite a rather limited range of cultural values (35-40 years old inhabitants in each region were surveyed) – there is evidence that regional variations in the levels of entrepreneurship are influenced by the prevalent cultural values. The values considered included change-orientation, need for autonomy, acceptance of capitalism, competitiveness, and valuation of money. Variations in achievement motivation, Jante-mentality (the attitude that one shouldn't try to stand out from the crowd) were not found to be important (though this does not mean that they would not play an important role if a wider range of cultures were sampled). The precise causality is an interesting question. Are people less prone to develop entrepreneurial orientations? Are people with such orientations unable to actualise them in hostile environments, and are thus being forced to migrate to other regions? What is the causality – are the values being shaped by experience of entrepreneurship, or vice versa? Life being complicated, it is quite possible that all of these possibilities have some truth

In earlier GEM work, Bygrave and Autio (2005) examined the relationship between entrepreneurship and individual beliefs. They concluded from survey results that in general, “individuals who are involved in early-stage or established businesses tend to be more confident in their own skills, more likely to know other entrepreneurs, more alert to the existence of unexploited opportunities, and less likely to allow the fear of failure to prevent them from starting a new venture” and mention other evidence suggesting that high levels of confidence, and alertness to unexploited opportunities contribute positively to the decision to start a new business being made. They also found cross-country differences, with fear of failure being more prevalent among people who are not active in entrepreneurship in high-income countries as compared to those in middle-income countries. Among actual entrepreneurs, though, it is people in higher-income countries who have higher tolerance for failure. They related these findings to the motivations for starting businesses – more people in middle-income countries being driven by necessity (thus being less sensitive to the threat of failure) – and the increased options and safety nets in richer countries. Perceptions of unexploited opportunities were found to be more positive among early-stage than established entrepreneurs, and those with more optimistic perceptions were more likely to start new businesses. On the whole women tended to be less optimistic and less confident in their entrepreneurial skills, and to have higher concerns about failure (which could be interpreted in terms of cultural influences on the two genders, rather than simply a matter of individual psychology).

In a detailed study in this report, Autio attempted to focus on innovative entrepreneurs. He examined large sample data on high-expectation entrepreneurial activity – defined as all early-stage businesses that expect to employ at least 20 employees within the next five years. While 8.3% of the adult population in the countries studied by GEM 2000-2004 participated in early-stage activity, only 2.7% of the adult-age population expected to have five or more employees, only 0.8% to have 20 or more. North America had the highest prevalence of this last group at approximately 1.5%; the rate was also high for other English-speaking countries (Australia, Canada, Ireland, New Zealand, and United Kingdom); Latin American countries stood at 1% but Europe and highly developed Asia only reached 0.5%. Looking at actual new ventures with high expectations, again North America was outstanding (16.9% of new businesses expected to create 20 or more jobs in five years), with Europe falling between this and the levels of Africa, Asia and Latin America (about half the US figures). High-expectation new entrepreneurs were found to tend to be male and less than 44 years old, and (among other results) better educated and in higher income brackets than low-expectation entrepreneurs.

Entrepreneurs are doing new things – starting new firms, in particular. Whether they are innovative in terms of introducing new products and processes to the world, or to the national or local industry or market, is less clear. There are certainly entrepreneurs who are pioneering new ideas involving new technologies, as in many Internet and software start-ups. There are many entrepreneurs whose new approach involves applying a different business model to what seemed like an established trade – Starbucks coffee shops are a case in point (and a large number of entrepreneurs jumped on this particular bandwagon in countries around the world). But many new businesses are not doing anything very new – they just supply goods and services to local markets in cheap and/or convenient ways. Probably the great majority of small firms and entrepreneurial start-ups are of this kind. The motivation for

entrepreneurial activity will sometimes be the desire to see an innovation put to use – and perhaps the desire to influence or profit from its use more than would be achieved by passing it on to a large firm. But sometimes the motivation will have little to do with innovation, and be more a matter of necessity (there are few suitable jobs available in the local labour market – this is a prevalent situation in many developing countries), personality (the individual cannot tolerate being an employee of those organisations that are around) or opportunity (there are clear unmet needs for the goods or services).

Though there is a fascinating body of research on High-Tech Small Firms, there is limited evidence on trends in the propensity of entrepreneurs to be innovators (and vice versa), and what sorts of innovators they might be. However, the GEM 2006 study did go on to enquire as to the relationship between entrepreneurial activities and innovation. Just over half of the early-stage entrepreneurs, in high income and low income countries alike, did not consider that they were responsible for products that were new to their customers. (And less than 20% thought they were introducing a product new to all consumers – “new to market” in innovation jargon.) Most entrepreneurs do not see themselves as using new technology, and small proportions consider themselves to be using the latest technology. Two more interesting results can be noted here – surprisingly, a rather smaller share of entrepreneurs in the richer countries describe themselves as innovative than their peers in poorer countries; and, perhaps less surprisingly, even fewer owners of established businesses see themselves as innovative.

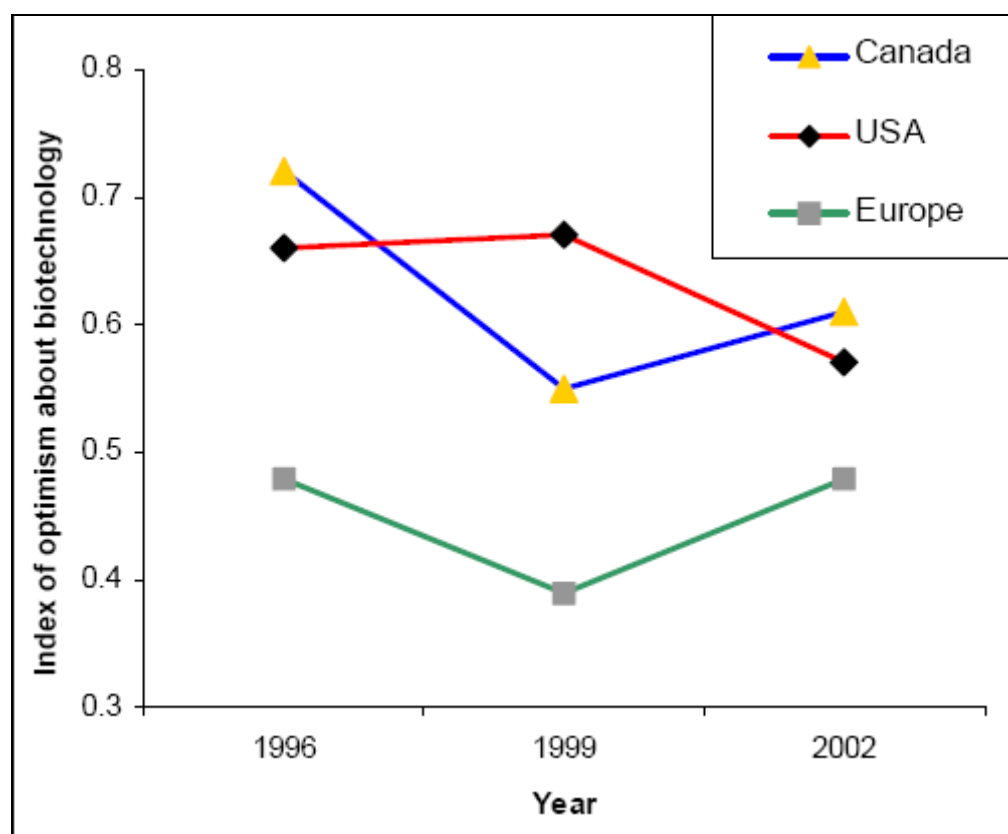
2.1.2 Consumers and Innovation

There have been a number of studies addressing the views that citizens hold about innovation. Indeed, there was a rash of studies in the 1980s about “Public Acceptance of New Technology”, when it was suspected that the introduction of new Information Technologies was being delayed by a combination of public hostility and workforce resistance. These studies on the whole concluded that public attitudes to new technologies were generally quite accepting; that while there were occasional industrial relations problems, workers generally saw investment in the new technologies as reassuring evidence of their firms having a future. If there was a problem, it was that many managers felt threatened by the new technologies and the need to make decisions about them! (cf. Hartley *et al*, 1985, Williams and Mills, 1986).

More recently there have been several rounds of research into such topics. The initial worries about public attitudes to new IT have been overtaken by concerns about biotechnology and latterly nanotechnology. The new biotechnologies raise novel ethical questions, as well as feeding into concerns about food safety and health. During the 1980-90s there was a significant shift in the attitudes of some government and regulatory officials, and some scientists, towards public views of science and innovation. The dominant approach may still be characterised as being one in which better public education is the solution to public resistance to particular lines of development. But it is increasingly recognised that public opinion is a signal that can help guide innovation, and that complex ethical and social concerns are being raised that are not always adequately addressed by standard methods of scientific decision-making and regulation.

The public reaction to genetically modified (GM) crops was a watershed here. During the 1990s GM crops received considerable media attention in across Europe and the US. Within Europe this attention was mainly negative, coinciding with the BSE and other food/health crises, prompting reconsideration of the role of public(s) in governance of science and technology. There was a general move in Europe away from ‘science-based’ regulation (as in the US) towards a more consensus-based or participatory model. For example, public consultation was written into EU legislation and the precautionary principle was adopted. There is no simple relationship between attitudes, regulatory principles, and the enforcement of regulations, however. Gaskell and colleagues have considered the relationships between public perceptions of technology and regulation, conducting fascinating research has been undertaken on cross-national and within-country differences (e.g. Gaskell, 2004; Gaskell et al, 2005; Gaskell et al, 2006). One example of these results on differences in public attitudes to biotechnology is demonstrated by [Figure 2](#), suggesting that Europeans⁵ were less optimistic about biotechnology than either Canadians or Americans between 1995 and 2002.

Figure 2: A graph showing the relative differences in levels of optimism towards biotechnology in Canada, the USA and Europe



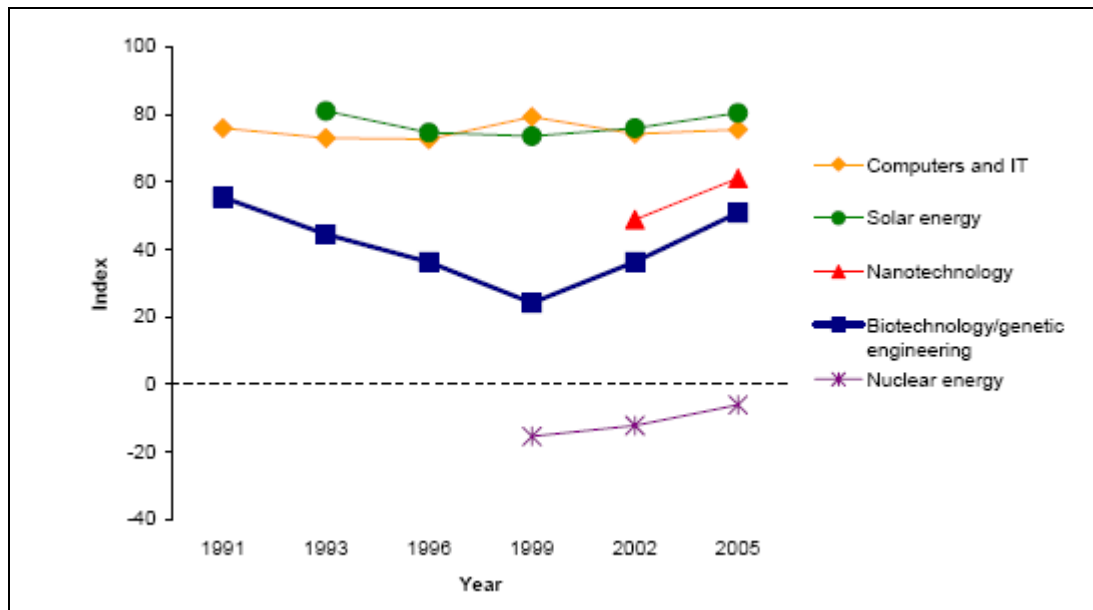
Source: Gaskell et al, 2006.

However, Gaskell et al (2006) have found that levels of trust across European countries have significantly increased over the past six years. The suggestion is that

⁵ For an intra-European comparison refer to Gaskell et al (2006).

prior to 1999 ‘biotechnology’ and ‘industry’ were associated with agrobio technologies (such as GM crops), but other applications (e.g. health) have since come to the fore. This serves to emphasise that different forms of innovation will receive different responses from consumers and the public more generally – making it difficult to draw conclusions about public – or market – attitudes to innovation generally. [Figure 3](#) below emphasises how different technologies elicit different levels of optimism – noting the increasing levels of optimism about biotechnology.

Figure 3: Index of Optimism at the European Level towards 5 Technologies



Source: Gaskell et al, 2006.

Other research has explored consumer attitudes more generally, especially examining views about new products and services, and the likelihood of adopting them. (This work may be challenged on the grounds that it does not differentiate between quite different types of innovation – a videogame console or mobile phone might be seen in a very different light to a car security system or a new sort of medical treatment, for example.)

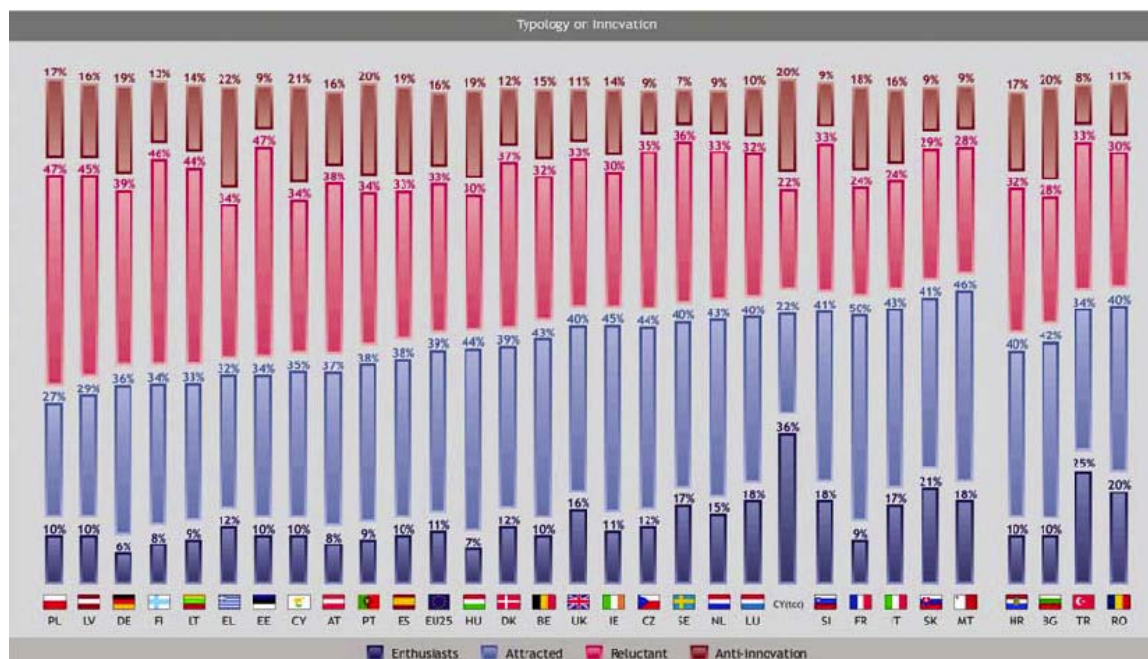
A Eurobarometer survey (2005) indicated that a majority of European citizens are receptive to innovative products or services – some **57% reported that they are drawn to these**. However, there is great internal diversity in Europe, both within and across countries. Factor analysis of survey results suggested that the population can be divided into four groups: see [Table 1](#), and national differences are displayed in [Figure 4](#). Enthusiasts are relatively preponderant (close to 20%) in Slovakia, Malta, Slovenia, Luxembourg (and Turkey and Romania). The first two of these, Malta and Slovakia, are the EU Member States with the highest proportion of pro-innovation citizens (“enthusiasts” plus those “attracted”). In contrast, there are around 20% of “anti-innovation” respondents in Greece, Cyprus, Portugal and Bulgaria. Poland and Latvia, however, are the EU Member States where there is the greatest share (over 60%) of citizens who are either “anti-innovation” or “reluctant”.

Table 1: European (Consumer) Attitudes to Innovation

Group Name	Proportion of EU25 population	Broad Characteristics of Group compared to others
“Anti-innovation”	16%	Female; aged 55 or over; lower level of education; living alone; principal occupation - taking care of the home or being retired.
“Reluctant”	33%	Female; aged 40 or older; tend to be manual workers or not economically active (though not students).
“Attracted”	39%	Male, young, students or white collar workers, living in a large household.
“Enthusiasts”	11%	Male, young, students, those with high levels of education, managers.

Source: Eurobarometer (2005)

Figure 4: Distribution of (Consumer) Attitudes to Innovation across EU Countries



The vertical bar indicates the share of the population belonging to each of the four groups: ■ Enthusiasts; ■ Attracted; ■ Reluctant; and ■ Anti-innovation

Source: Eurobarometer (2005)

The results are fascinating – and surprising. While there seems to be some tendency for Southern European countries to be less favourable to innovation than Northern Europe, there are several exceptions, some of which are quite surprising. In particular, Finland's low enthusiasm hardly corresponds to the popular perception of this as a highly innovative country, and Germany is also strangely located in this respect (with very few enthusiasts). Some "Southern" countries appear as very favourable, in contrast. This result is probably easier to explain, despite the general evidence presented in this study to the effect that wealthier people are less troubled by the costs of switching to innovative products. We could suggest that in the poorer countries, like Turkey and Romania, the desire for modernization is very great, and innovative products are seen as symbolic of movement in this direction.

2.2 Some Current Approaches to Attitudes and Values

This section of the report considers some approaches to culture that have been the subject of a great deal of attention in recent years, and whose analyses might be expected to cast light on some deeper forces underpinning innovation.

2.2.1 The "Risk Society"

A sociological approach that has considerable relevance to innovation was introduced by Ulrich Beck in 1992, using the term "risk society". In the past, he argued, dangers were largely seen as beyond human control, as being the product of forces of nature or the will of God. But in contemporary societies, risk is (or at least is seen as) increasingly created by human activities – including technological innovations. Risk is also managed – so that those in power are seen as responsible for foreseeing, averting, and dealing with the consequences of natural and human-made hazards. Modern risks are thus seen as a matter of human agency - decisions and choices – rather than one of chance or matters beyond our influence. This applies to disease, flood, famine, etc., as well as to security risks like war, invasion, crime, etc. – and the real or numinous hazards related with nuclear power stations, mobile telephone masts, GMO crops, and so on. Nature is not written out of the equation, of course, but most of our encounters with nature are mediated through our technologies and infrastructures. Risks are thus seen as having been generated by decisions to attempt to control nature with our technologies (a slightly different point is indicated by the way in which "mad cow disease" (BSE) and even AIDS have been interpreted as "nature striking back").

This analysis helps to explain the rise of litigation, the "blame culture" (somebody must be held responsible when things go wrong – somebody should have been aware of the dangerous consequences of actions etc.), and the "audit culture" (necessitating the creation of audit trails showing that due diligence has been exercised) and risk management philosophies and practices (Powers, 1997).

The approach is potentially very relevant to studies of innovation. On the one hand, we might expect awareness of these trends to influence innovator's propensity to take risks, at least those risks that might lead to others blaming them for bad consequences which they are experiencing. The response may not be just to reduce risk-taking; it may lead to (a) decisions to take some sorts of risk rather than others (e.g. less visible risks, those affecting less powerful and vocal groups, etc.); (b) effort going into risk management systems, and related research and design efforts that minimise those risks that have been identified; (c) investment in Public Relations and legal services

that can reduce the likelihood of regulatory action or successful litigation against the innovator. It is interesting to note in this context that the US is simultaneously held to be a highly litigious country and one that accepts a great deal of technological innovation.⁶

On the other hand, the analysis is also liable to be relevant to consumption decisions and thus to the uptake of innovations. The analysis would suggest that there should be greater awareness that there are consequences of our consumption decisions, and governments have been keen to promote this awareness in at least the health domain for many years now. (The case here – that as major epidemic disease have been curtailed, many of the main sources of mortality reflect individual consumption decisions – accords with the risk society account quite neatly.) Certainly a proportion of the population is highly interested in personal and sometimes broader social and environmental consequences of their consumption decisions – though the continual need for strong government and pressure group campaigns suggests that this is a minority position. There does not yet seem to be a great deal of analysis of variations in attitudes to risk across societies and regions, conducted within the Beck framework; the next subsection will however introduce some related ideas that have been studied extensively on a geographical basis.⁷

Risk has been at the heart of some analyses that are not completely aligned with the Beck work. The UK Foresight Programme, for example, has commissioned major analyses of the social psychology of risk (one good publication here is Eiser, 2004). More generally, innovation and other researchers have noted that some technologies are more controversial than others; and the degree of controversy is related to the perceived risks associated with the technology, and how these risks are being addressed.⁸

Table 2 outlines a number of factors believed to be associated with the degree of public controversy around innovations. (Note that risk society ideas, and evidence as to other shifts in social perceptions, might imply a movement of innovations so that more become controversial on one or other criterion.)

⁶ Litigation around the effects of pharmaceuticals may yet have a major impact, and arguably already has impacted decisions about where trials of new drugs are carried out.

⁷ Lash *et al* (1996) explores some of these themes.

⁸ Risk frameworks emphasise the importance of moving beyond the specific characteristics of the products and processes to the social system of information surrounding the technology (Einsiedel, 1998).

Table 2: Factors Important to Risk Perception and Evaluation

FACTORS	CONDITIONS ASSOCIATED WITH GREATER PUBLIC CONCERN	CONDITIONS ASSOCIATED WITH LESS PUBLIC CONCERN
Catastrophic potential	Fatalities and injuries grouped in time and space	Fatalities and injuries scattered in time and random
Familiarity	Unfamiliar	Familiar
Understanding	Mechanism or process not understood	Mechanism or process understood
Uncertainty	Risk scientifically unknown or uncertain	Risks known to science
Controllability	Uncontrollability	Controllable
Voluntariness of risk	Involuntary	Voluntary
Effects on children	Specifically at risk	Not specifically at risk
Manifestation of effects on future generations	Risk to future generations	No risk to future generations
Identification of victims	Identifiable victims	Statistical victims
Dread	Effects dreaded	Effects not dreaded
Trust in institutions	Lack of trust in institutions	Trust in responsible institutions
Media attention	Much media attention	Little media attention
Equity	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Benefits	Unclear benefits	Clear benefits
Reversibility	Irreversible effects	Reversible effects
Personal stake	Individual personally at risk	Individual not personally at stake
Origin	Caused by human actions or failures	Caused by acts of God or nature

Source: Covello, Sandman and Slovic (1991)

Note: we would suggest that the items down the left-hand column are properly specified as *perceptions of* these phenomena.

2.2.2 “Postmaterialism”

Perhaps the best-known and most influential approach to understanding the evolution and spatial variations in values and attitudes derives from the work of Ronald Inglehart. For several decades, he has been elaborating a theory of intergenerational value change and accumulating evidence on this process on a cross-national basis. He draws upon Maslow’s famous theory of a hierarchy of needs (which argues that basic needs have to be satisfied before more sophisticated needs are pursued). Inglehart suggests that as Western societies (and several others) experienced a long period of increasing affluence and relief from the effects of war and natural disasters, cohorts have grown up with their basic “materialist” needs being largely securely satisfied. In consequence, they have put more priority on “post-materialist” needs. (It may be remarked that this has some correspondence with theories of post-industrial society, which argued that the ascendance of services as compared with manufacturing represented a shift in social demand for services versus goods.⁹ Thus, as threats to basic welfare have declined, so a shift of values across generations has followed – Inglehart termed this the “Silent Revolution“. This could be related to the “risk society” argument, in that the sorts of risk encountered have been less to do with one’s basic material circumstances, and have become more to do with threats to self-esteem and self-realisation.

Beck’s original work was largely based on observation of political movements, media concerns, and the like (and was criticised by some sociologists as being too journalistic!) In contrast, Inglehart has amassed empirical data using social-psychological approaches - large-scale surveys of people’s values – though he is not averse to wider evidence and speculation. As far back as the 1970s (and perhaps he had been influenced in his thinking by the counterculture of the 1960s), he was finding evidence for differences in values between younger and older generations; evidence was accumulated that there were continuing trends towards postmaterialism. As younger birth cohorts replaced older ones, the adult population has shifted toward postmaterialist values (which seem to be fairly stable ones – the perspectives forged in childhood do appear from this work to be carried forward through one’s life). Current European surveys suggest that (by these survey questions) postmaterialists and materialists are roughly equally balanced in Western countries - while in the early ‘70s only ¼ were postmaterialists. (Abramson and Inglehart, 1994). [Figure 5](#) displays some exemplary results from such studies Eurobarometer surveys have incorporated simple Inglehart indicators for surveys across the European Union from the early 1970s. Many other countries – including the U.S. and Japan - have been included in studies using similar indicators.

What about innovation? First, consider Inglehart as compared to Beck. Though neither Beck or Inglehart spell it out in quite this way, we could suggest that the trend would be such that threats to basic welfare will increasingly be seen (a) as threats to one’s self-esteem and status as well as purely material deprivations and (b) as the

⁹ This account of the rise of the service economy has been faulted on a number of counts, even though there are generally conceded to be shifts in the sorts of things that people are consuming in their everyday lives. Criticisms include: (1) shifts in consumer expenditure and employment reflect changes in productivity and thus the prices and labour requirements for goods versus services; (2) these shifts also reflect technological and other innovation in industry and in products, which changes the convenience and quality of goods, services, and self-services.

products of human agency and thus as threats that have to be responded to accordingly. Delving deeper, though, there might appear to be a contradiction in a simple reading of what the Beck and Inglehart theses say about innovation. Might not “risk society” approaches lead us to expect that risk-averse people would be more cautious about innovation? Might not “postmaterialist” approaches imply a growth of people prepare to experiment with ways of self-expression and self-realisation? The situation is more complex. “Risk society” does not necessarily mean more “risk averse”, but more “risk-oriented” when it comes to making decisions and reflecting on routines. This may mean embracing innovations that offer, for example, longer lives (dietary supplements to reduce cholesterol or stave off the effects of ageing, for example), greater security (mobile phones too stay in contact with emergency services and family members), etc. It will be the type of innovation, the risks it addresses, and the risks it raises, that will be the issue. “Postmaterialists” may be concerned about certain types and trajectory of innovation on account of the risks to their cherished values. Thus some analysts have suggested that the Eurobarometer surveys indicate that countries where there are higher levels of post-materialistic individuals tend to express more pessimistic views of technology, while countries with higher levels of materialistic values tend to be more optimistic (Durant *et al*, 1998). (We shall consider some of the cross-national comparative work later.)

Values such as environmentalism, together with concerns over the directions of technological change, appear to be associated with post-materialism. Commentators in the Inglehart tradition see the shift toward postmaterialism as a major driver of environmental concerns and movements, for instance.¹⁰ Postmaterialists tend to place higher priority on protecting the environment than materialists. They are markedly more likely to join environmentalist groups.¹¹ More recent birth cohorts generally have stronger environmentalist values than do cohorts born earlier.¹² Given the deep-seated environmental problems that are associated with the development paths of Western societies (and increasingly, the whole industrialised and industrialising world), it is not surprising that postmaterialists have some reservations about the paths of technological development that have been intrinsic to these paths. They might be expected to be sympathetic to technological solutions of the clean and clean-up varieties, but not necessarily to “macroengineering” answers to climate change (large-scale and largely untried projects with their own risks and unintended consequences) and to processes of technology choice in general which involve centralised and nonparticipative decisions and systems.

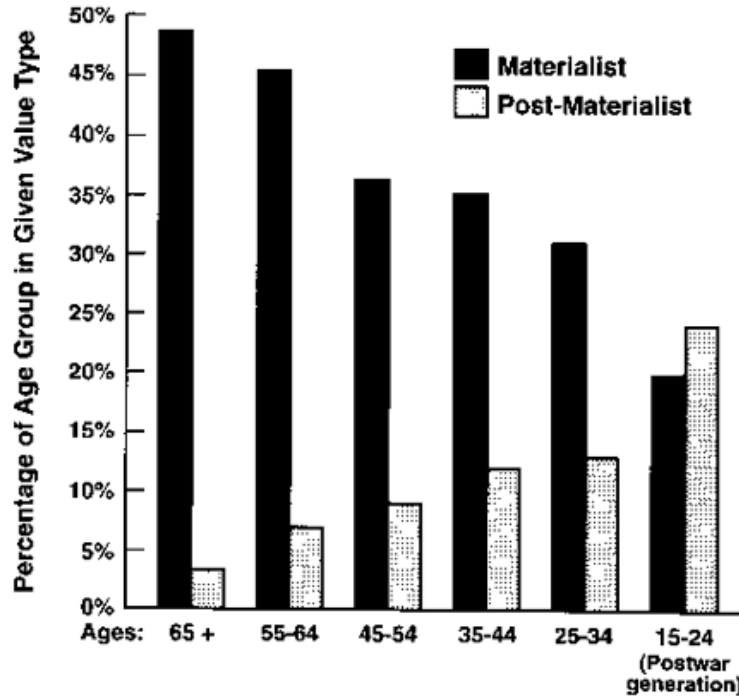
¹⁰ But it is unwise to assume that postmaterialists are somehow “beyond” wanting more material goods - their material aspirations may be high ones. (Miles 1975) Advanced sports training and audiovisual equipment can have a high material component!

¹¹ Inglehart, 1990, Kanagy *et al*. 1994.

¹² This appears to be more stable and consistent than the relationship between environmentalism and, say, gender and occupational status.

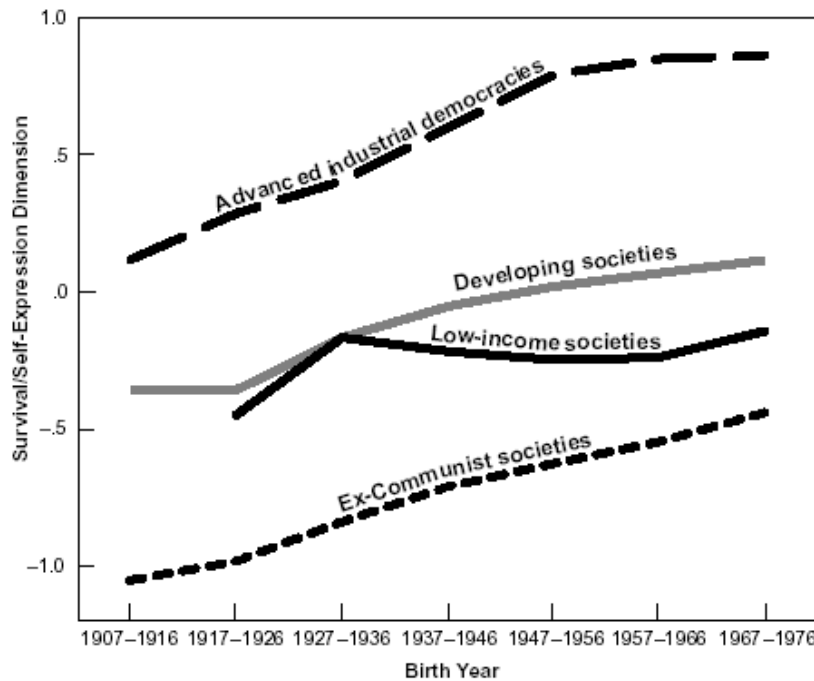
Figure 5: Two Examples of Results Using Inglehart’s Approach to Materialism/Postmaterialism

(a) Differences in Values between Generations and Educational Groups in Eight Western Societies



Source: From Inglehart (1997), accessed 11/07 from http://margaux.grandvinum.se/SebTest/wvs/articles/folder_published/article_base_56

(b) Survival/Self-Expression Values by Year of Birth for Four Types of Societies



Note: High values indicate high self-expression. Data weighted to give each society equal weight.
 Source: *Figure 8* in R Inglehart & W E Baker, 2000, “Modernization, Cultural Change, and the Persistence of Traditional Values” *American Sociological Review*, 2000, 65 (February) pp19-51 available at: http://wvs.isr.umich.edu/papers/19-51_in.pdf

Thus these approaches imply that we have to move beyond ASSUMPTION A. At least in terms of the risk/postmaterialism issues, it is not clear that some societies are simply more culturally resistant to new technologies than others, and that this leads to different levels of innovation. Attitudes to innovations – and the way that the innovation process is governed – are liable to reflect both increased interest in “postmaterial” goals, and increased concern with how various types of risk are being addressed. We also will need to consider specific types of innovation and perhaps even types of innovation process.

Furthermore, the risk and postmaterialism arguments both stress the long-term development towards societies dominated by new types of value. Inglehart argues that the generational values he assesses are very stable ones, so that there is little hope for rapid results from policy interventions aimed at changing these elements of culture. However, the way in which these “deep” values are expressed is affected by opportunities and by perceptions. Attitudes and behaviour towards specific innovations may be influenced by whether these are seen as favouring or acting against certain key values. This understanding underpins much effort by marketing experts to persuade consumers that new (or established) products really can help them fulfil one or other life goal. It might also be relevant to policymakers thinking about how to position and describe their innovation choices and programmes!

2.3 Attitudes and Values in Spatial Contexts

2.3.1 The Post-materialist shift and national differences.

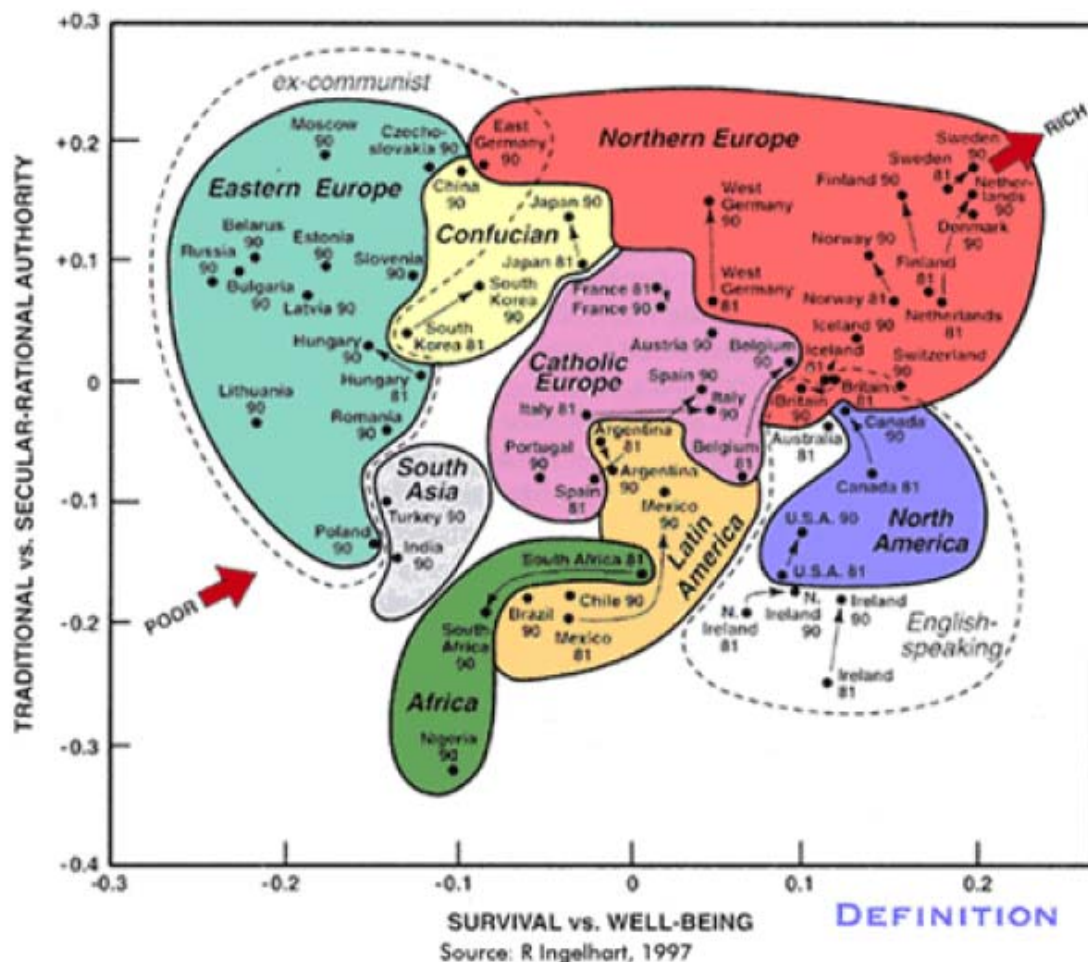
Welzel, Inglehart and Klingemann (2003) argue that three dimensions constitute Human Development, and share a common theme - broadening human choice. Socioeconomic development provides people with *individual resources*. Cultural change increases *self-expression values* (which mean higher priority being given to autonomous choice in social affairs); Self-expression values are measured by questions asking about tolerance of human diversity; inclination to civic protest; liberty aspirations; trust in people; life satisfaction (high); and religiousness (weak).¹³ Democratization means increasingly *effective rights*. The approach is reminiscent of earlier modernisation theories, but these authors are well aware of variations within as well as across countries. They analysed data from World Values Surveys concluding that socioeconomic development, cultural change and democratization tend to go together. They argue that there is a causal effect from individual resources and self-expression values to effective rights, which operates through its impact on *elite integrity*, a cultural-political factor that renders given rights effective rather than just declarations on paper.

As for cross-national differences, in addition to the economic development process that increases individual resources, Inglehart (1997) and others cluster nations into larger “cultural zones” which tend to share similar worldviews, institutions, ways of life. Inglehart follows a relatively common approach of classification according to common religious roots, as displayed in [Figure 6](#), where clusters based largely on measures of values in the population are interpreted in terms of mainly religious traditions. This is of course interesting in the context of the huge and long-lasting

¹³ There is a strong resonance here with Florida’s emphasis on tolerance and creativity (see later).

impact of Max Weber’s thesis as to the impact of the Protestant ethic on the growth of capitalism. But it is striking that there is no obvious immediate correlation between location on this map and innovativeness. It would perhaps be aesthetically pleasing if movement toward the top right hand corner were tied to innovativeness (not that Finland is in this area). But the neither USA nor Japan are here, and they are in fact quite distant from one another.

Figure 6: A Global Map of Cultures



Source: From Inglehart (1997), accessed 11/07 from http://margaux.grandvinum.se/SebTest/wvs/articles/folder_published/article_base_56)

In one respect this may be reassuring: a country is not necessarily bound by its longstanding religious/cultural traditions to be less innovative than might be desired. Matters are more complicated – and in other work Inglehart shows that Catholic France and Protestant Britain are much more alike in terms of (weak) religious observance than are Catholic Ireland and Italy and the Protestant United States. (Norris and Inglehart, 2005). Religious and other aspects of cultural institutions may mediate between the sorts of values implied in the postindustrialism thesis (and in work on risk, omnivorousness, and other values) and their manifestation in behaviour. But the underlying value shifts may still be underway, and they may impact upon the cultural institutions themselves in due course. We may see defensive

traditionalist/fundamentalist reactions, or more tolerant and liberal adaptations, for example.

Another important issue here is that there is considerable variation within countries, despite the supposed homogenising effects of mass media. Norris and Inglehart, indeed, show that religious practices vary dramatically within countries, and these variations seem to be fairly closely related to social dimensions such as class. This might suggest that we should drop a territorial focus, and instead consider social groups independently of space. There may be some merits in doing so. But we shall shortly examine one line of analysis that relates class, innovation and cities together. There may be advantages, then, in looking at smaller territories than the nation, and we will consider lines of work focusing on cities in later sections.

But let us briefly consider a few more straws in the wind relating (national) culture to innovation. Rusanen (2002) examined the question of how it is that Finland, a society which would be expected to feature a high level of postmaterialism, is innovative – and not only in respect to Information Technology.¹⁴ There is also a high level of support for biotechnology applications in both agriculture and industry, unlike in many European countries – and contrary to some expectations that might be derived from risk society and postmaterialist analyses. (Though we suggested earlier that these deductions do not rest on very solid foundations, even if we were completely behind one or both of these lines of analysis.) Rusanen argues that other sorts of cultural phenomenon can and do play important roles. In the Finnish case the climate and geography have led to distinctive agricultural history in terms of reliance on technological innovation and probably popular sentiment about farming and nature, too. The Information Technology success story is seen as having helped rescue the country from an economic impasse, and thus innovation is regarded as beneficial – and again we could gloss Rusanen by suggesting that this story is also felt to be rather tenuous (what happens if Nokia leaves, or makes costly mistakes?) and thus pinning hopes on other foci of innovation is a reasonable strategy.

Attitudes to biotechnology are of course well-known to vary sharply across countries and technologies – viz. US/EU divergence on stem cell research and GMOs. There is emerging a sophisticated body of studies examining these attitudes in some depth. This was briefly discussed in Section 2.1.2 Consumers and Innovation, for example, Gaskell and colleagues research on attitudes to biotechnology across European countries using the Eurobarometer data. It is sufficient to say that attitudes towards technology can vary between countries (and other spatial contexts) significantly.

2.4 The Sub-National Context; The Creative City

If the national level is too large-scale to give real purchase on innovation culture, what then is a useful level? Recent work has tended to identify the city, or city-region, as a key unit of analysis.

Economists and geographers have long studied the propensity of similar activities to be grouped together in space – agglomeration – and cities are widely seen to be the most important and visible units of economic agglomeration. They are seen as

¹⁴ Note the apparent contradiction here with the Eurobarometer results displayed earlier.

supporting economic growth by leveraging localisation and urbanisation (Fujita and Thisse, 2002); as being complex networks of institutions that enable firms and households to deal with uncertainties and contingencies in a complex and dynamic environment (de la Mothe, 2004); and as constituting pools of human capital in which social and intellectual diversity fosters creativity and innovation (Florida, 2002). They have a critical mass for specialised activities, and support a great diversity of such activities, allowing for innovative cross-fertilisation (Castells, 2001). They work within global networks, being ‘brands’ in their own right, sites of economic and cultural activity and of symbolic significance, and nodes in internationally connected economies and international city-networks (Scott, 2006).

Box 5: Florida on the Creative Class

“The economic need for creativity has registered itself in the rise of a new class, ... the Creative Class. Some 38 million Americans, 30 percent of all employed people, belong to this class. I define the core of the Creative Class to include people in science and engineering, architecture and design, education, arts, music and entertainment, whose economic function is to create new ideas, new technology and/ or new creative content. Around the core, the Creative Class also includes a broader group of creative professionals in business and finance, law, health care and related fields. These people engage in complex problem solving that involves a great deal of independent judgment and requires high levels of education or human capital. In addition, all members of the Creative Class – whether they are artists of engineers, musicians or computer scientists, writers or entrepreneurs – share a common creative ethos that values creativity, individuality, difference and merit. For the members of the Creative Class, every aspect and every manifestation of creativity – technological, cultural and economic – is interlinked and inseparable...”

“Given that creativity has emerged as the single most important source of economic growth, the best route to continued prosperity is by investing in our stock of creativity in all its forms, across the board. This entails more than just pumping up R&D spending or improving education, though both are important. It requires increasing investment in the multidimensional and varied forms of creativity – arts, music, culture, design and related fields – because all are linked and flourish together. It also means investing in the related infrastructure and communities that attract creative people from around the world and that broadly foment creativity.”

Richard Florida (2002) **The Rise of the Creative Class**, pp8. Second quote from Brecknock, 2004)

There is evidence suggesting that innovative activities are liable to cluster within certain cities, and the characteristics of a creative city have become a topic of considerable attention in the last decade. Authors such as Richard Florida and Charles Landry have become prominent in the debates on this topic, but there are many other researchers adding to analysis of the topic. What they typically share is an emphasis on elements of the urban (or regional) system that go beyond simple measures of inputs to innovation. Florida’s case – in which he is using the term “creativity” rather than “innovation” – is reproduced in Box 5.

Florida's argument is that we are in a new phase of development in which the driving forces of economic are human factors rather than simply technological and organizational parameters. Levels of creativity (and innovation) are linked to the openness and tolerance of the environment in which people work – a restatement of our ASSUMPTION A.

He suggested thinking in terms of three “T”s; **Technological capacity** is a pre-requisite for innovation; **Talent** is also vital, with flows of talented individuals into the region being essential; **Tolerance** is seen as the cultural foundation for creative clusters to be built. The “common creative ethos” mentioned in Box 5 is a strong statement about culture, declaring that the “creative class” very much has a shared set of values (sounding rather like Inglehart's postmaterialists). Creatives' are attracted to, and try to develop, places where these values can be expressed.

Florida courted controversy, and achieved considerable media coverage¹⁵, by combining measures of such environmental features with more conventional measures of innovative outcomes (such as number of patent registrations), to provide an overall creative city rating. In his initial work on US cities he combined:

- High-Tech Index – measure of high-tech industries
- Innovation Index – measure of numbers of patented innovations per capita
- Gay Index – measure of same sex couples living in region
- Bohemian Index – measure of artistically creative people
- Talent Index – based on numbers of people with bachelor degrees and above
- Melting Pot Index – measure of foreign born people living in region

To yield composite indicators such as the:

- Composite Diversity Index – composite of gay, Bohemian and melting pot indices
- Creativity Index – composite measure of the innovation, high-tech, gay and creative class indices

So cultural features play a large role in Florida's analysis. He presented evidence showing correlations between the importance of the creative class (as indexed by the numbers in particular occupations as a share of the population or labour force) in US cities, and the extent to which these cities offer cultural facilities, and displayed ethnic diversity and “tolerance” towards alternative lifestyles (which has been one of the more controversial aspects of his analysis). The causality is supposed to be that the creative class prefers particular sorts of work and cultural environments – as captured in the three Ts, above. He differentiated between three subgroups of this class:

- the **creative core** – specialised in technical creativity, such as researchers, engineers, doctors, characterized by high skills and educational attainment, accounting for much of the economic value produced;
- **creative professionals** – the largest subgroup, with managerial and professional skills, such as managers, and professional service workers¹⁶; and
- **bohemians** – with more aesthetic and cultural creativity, such as artists, writers, designers, usually constituting fewer creative workers than the other

¹⁵ The Rise of the Creative Class has been described “as the most popular book on regional economies in the past decade” (Glaeser, 2004: p1).

¹⁶ We suspect that in some financial centres it is this group that yields most value-added, at least as conventionally defined.

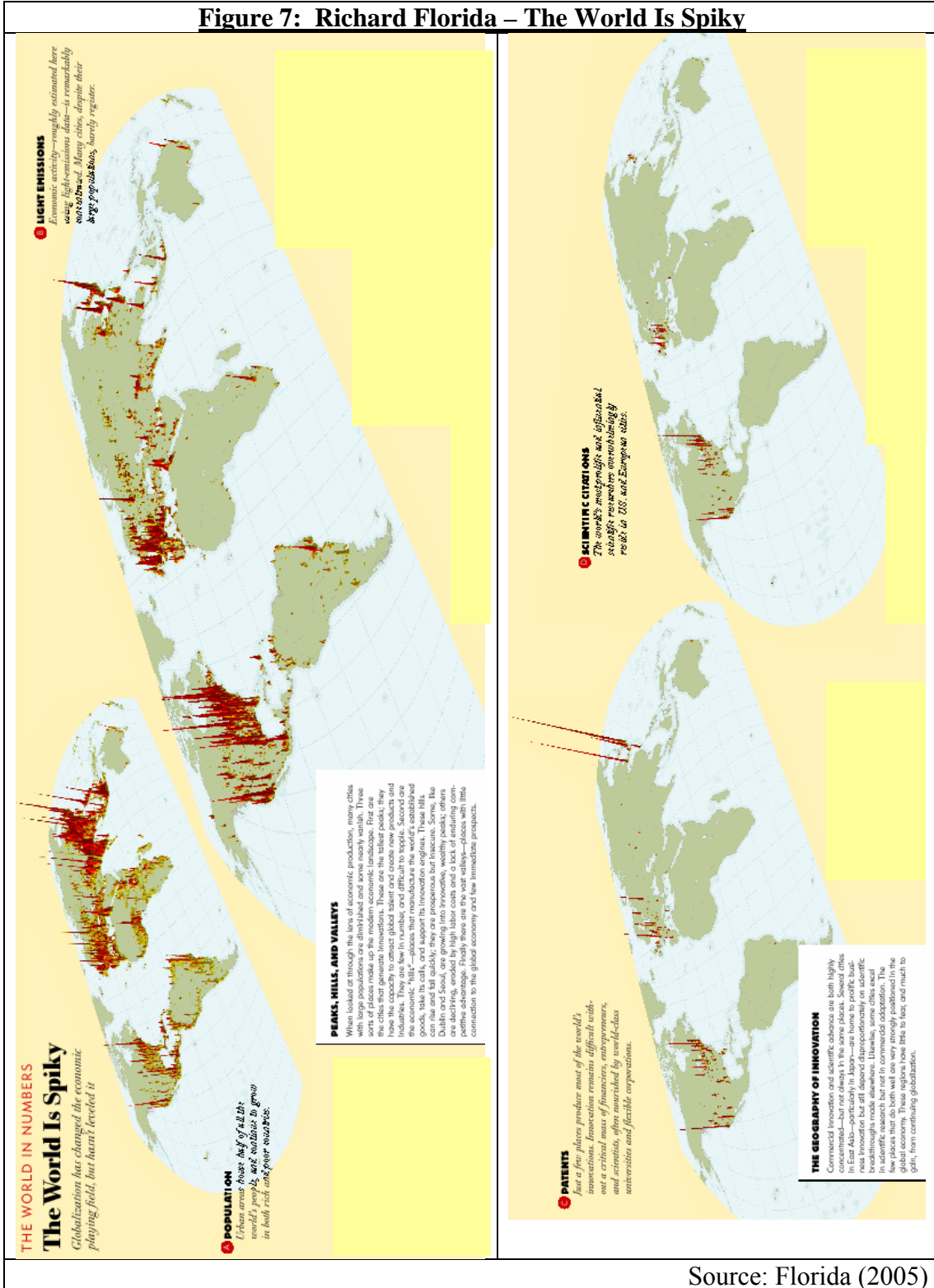
groups – but possibly a key set of what were called earlier “omnivorous consumers”, and important consumers of urban services and producers of urban culture whose presence is attractive to other technical, economic and social creatives.

Florida also argues that, contrary to the view that the “world is flat” (Friedman, 1999), the world is “spiky” – improved transport and telecommunications may reduce the significance of distance, but this has not meant that all areas have become equal. *“In terms of both sheer economic horse-power and cutting-edge innovation, New York’s economy alone is about the size of Russia’s or Brazil’s, and Chicago’s is on a par with Sweden’s. Together New York, Los Angeles, Chicago, and Boston have a bigger economy than all of China. If U.S. metropolitan areas were countries, they’d make up forty-seven of the biggest 100 economies in the world.”* He also notes that the University of California generated more patents than either India or China, while IBM accounted for five times as many patents as the two countries manage together.

In the Atlantic Monthly article in 2005, from which these quotations are drawn, Florida created a stir with the presentation of maps depicting this spikiness (Figure 7). He used an image of the night-time world as a proxy indicator for cities’ economic activity. The peaks represent the light emissions and thus (crudely) the energy use and associated economic activity. From the American “Himalayas” can be seen Europe’s smaller mountain range and the odd peaks of Asia and scattered hills elsewhere. A second map measured innovation — using the even more problematic indicator of patents (from use of data from the World Intellectual Property Organization and the US Patent and Trademark Office) – and showed acute spikiness. He also went on to plot where in the world the 1,200 most heavily cited scientists, in key fields, lived – and found that such scientific leadership to be even more concentrated than patenting activity – and not always based in the same places.

Thus Florida suggested that several of the commercially innovative East Asian cities display little scientific excellence, while some other cities are specialised the other way round; relatively few places lead in both respects, and these are particularly well positioned in the global economy. (Some commentators have suggested that Florida is biased here towards particular sorts of science and commercial application, and that somewhat different approaches would place other cities in a better light.)

Figure 7: Richard Florida – The World Is Spiky



Source: Florida (2005)

Florida distinguishes between:

- **The tallest peaks:** the relatively few cities that generate innovations, new products, new industries. They are attracting global talent, and Florida sees them as difficult to topple and even growing higher. They are connected to one another by communication networks and human mobility – perhaps the world is paradoxically “flattest” for those at its peaks.
- **The economic “hills”:** prosperous but insecure cities, some of which are themselves on the way to becoming peaks (Florida mentions Dublin and Seoul), some of which are losing position. They perform much less innovative manufacturing and provide services like call centres.
- **The vast valleys:** large tracts of the world which are showing little dynamism and ability to shape global technology and economic affairs. These have mainly local connections.

While the approach has caused much controversy, some other researchers’ results seem to support much of the Florida thesis. Statistical consultant Robert Cushing¹⁷ comparing twenty American cities with high levels of high-technology industries and patent activities and concluded that the “Cities of Ideas” were more open to new ideas and other cultures, were more likely to engage in individualistic activities, were more optimistic, and had a higher percentage of artists, musicians and writers than did “Traditional Cities”. William Frey, a demographer with the Milken Institute and a professor at the University of Michigan, provides evidence that cities with robust migration are in ascendance while those that cannot attract immigrants are in decline (Lisher and Bishop, 2002).

Lorenzen and Andersen (2007) have recently analysed the geographical distribution of Florida’s “creative class” among 445 European cities. They explore various arguments as to what makes cities attractive to creative individuals. In general, larger cities attract more creatives, but the pattern is not linear. There is some evidence that the smallest cities (below 70,000 inhabitants) show strong relationships between size and the share of creatives. This may mean that there are minimum scales for supporting creative industries or cultures, creative product and labour markets.¹⁸ Cities with more than 1.2 million inhabitants, in contrast, show a weaker relationship between increasing size and share of the creative class - possibly reflecting increasing unattractiveness due to urban congestion and similar features. (see [Figures 7a-c](#)). Bohemians were especially attracted to large cities. The authors showed that the “cultural offer” of European cities (as indicated by a measure of the number employed within cultural services) was strongly related to city size. For cities smaller than 80,000 inhabitants, there seemed to be a strong decline in cultural services with decreasing size, and the creatives and especially bohemians could be seen as responding to this (though there may be some circularity in the argument here, since bohemians are likely to work in cultural services.)

¹⁷ <http://www.statesman.com/specialreports/content/specialreports/citiesofideas/0428lists.html>

¹⁸ For the technically minded, they are using ranked data and testing Zipf’s “rank-size” Law.

Figure 7 (a) The rank-size distribution of the European creative class (2000)

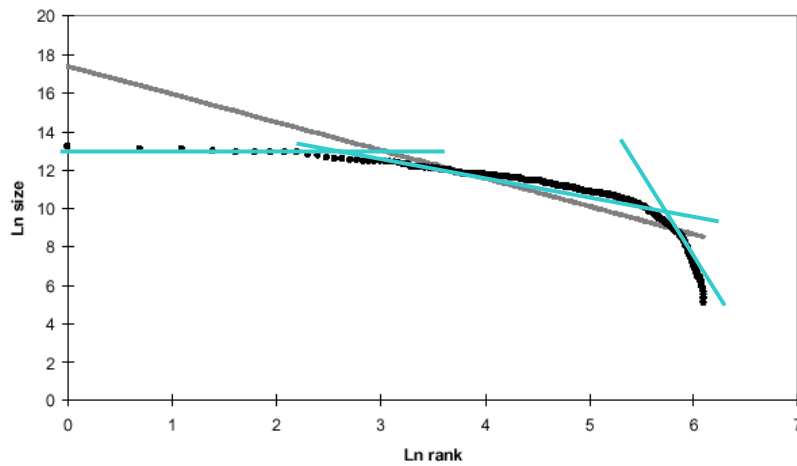


Figure 8 (b) The rank-size distribution of European cities' cultural offer (2000)

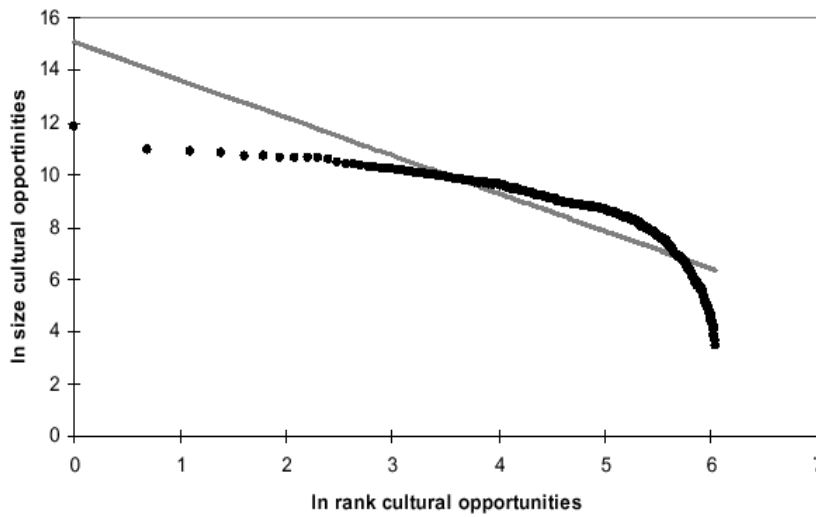
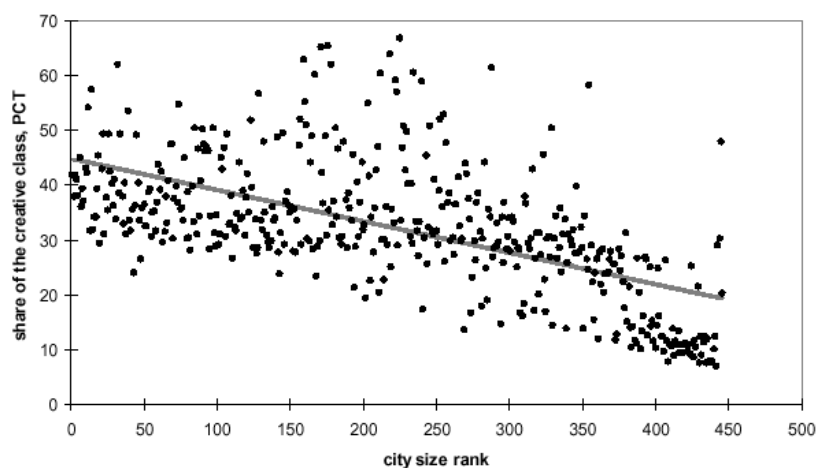


Figure 8 (c) European city population rank and share of creative class (2000)



Source: Figures 1, 5, 7 from Lorenzen and Andersen (2007) (red lines added to top figure)

Much of the literature on creative cities deals with places that are well-known for their being sites of innovation (e.g. Silicon Valley is home to much IT hardware, software, and services innovation). But the discussion tends to be about “creativity” and the creative sectors, as much or more than it is about innovation. Still, the idea is that creative contexts are ones that tolerate and indeed reward new ideas and practices, displays of creativity, and practical applications of innovative ideas. They are also places where diverse skills are available, so it is possible to establish teams to work on new projects and thus to react more rapidly to changing market and technological conditions.¹⁹ The cultural element here goes beyond conventional economies of agglomeration. The argument is made strongly that some urban environments are more welcoming to this sort of cooperative flux than others. For policy, this implies looking beyond the provision of supply-side resources such as training and retaining graduates and attracting “star” scientists; it also means considering the more challenging cultural issues. City governments have ways in which they can foster a thriving artistic scene, and this may help improve the attractiveness of a place to immigrants (and to qualified graduates looking for a permanent base). A mixture of vibrant cultural spaces and more relaxed parks and suburbs can be built over the long term, and these factors may also be attractors. But whether such policy moves support the sorts of organisational culture which (as we see below) nurture innovation is harder to assess.

Florida clearly struck a chord in that many of the cities he identified as diverse and creative are recognizable as centres of high-tech innovation. His approach has allowed for a simple statistical representation of creativity - or at least of critical success factors for nurturing it. But he has been criticized for stressing narrow measures and types of innovation,²⁰ and for mixing up things that are by-products of a highly creative professional population with things that might attract such a population. As with a lot of the discussion of creative clusters, his work has been attacked as being misleading in being “voluntaristic” - suggesting that policies can engineer such innovative environments, while most of the cases depicted are more a product of serendipity and/or market forces. (For example, Melanga (2004); Nathan (2005) argues that the model that seems to work for US cities may be less valid for European context.) Factors such as low tax, “business friendly”, environments have been held up as the real issue, not cultural diversity and openness; while left-wing critiques focus on the failure to take into account intra-urban inequalities and the

¹⁹ This account clearly resonates with analyses of the changing dynamics of science (the “Mode 1” versus “Mode 2” thesis of Gibbons *et al*, 1994) and those of innovation (distributed innovation processes, user involvement in innovation, etc.); and with analysis of “projects” and the organisation of creative industries.

²⁰ A rapid and interesting response to Florida’s article came in a blog from John Hagel (at http://edgeperspectives.typepad.com/edge_perspectives/2005/10/the_world_is_sp.htm) who argues that Florida defines innovation too narrowly and thus overlooks the scope for “new agglomerations of creative talent to come together and connect into the global economy”. Patents and scientific leadership may focus our attention on product innovation and fundamental science. But “hills” can be extraordinarily innovative in terms of rapid incremental process innovation, which can underpin rapid economic growth. “Companies in some of the rapidly growing urban areas like Shenzhen and Bangalore are pursuing a powerful form of innovation bootstrapping that starts with relatively modest incremental innovations pursued in rapid iterations and amplified by rich interactions with dense local business ecosystems. This ... accelerates learning and capability building and ultimately bridges into more fundamental product and technology innovation, as is already happening in areas like wireless technology in both China and India. With aggressive use of bootstrapping, even the most modest hills have the opportunity to become formidable peaks.”

Box 6: HOW TO BECOME A CREATIVE CITY (Landry and Bianchini)

Here we summarise (and occasionally augment) the set of points presented as “How to become a creative city” by Landry and Bianchini. Some topics are clearly more oriented towards cultural issues, and some are more innovation focused, than others; but it is useful to examine the whole range of initiatives they specify (not least because they are in many ways synergistic).

- *Making the most of creative individuals* – positively sanction “creative deviance, e.g. through experiment-encouraging grants for innovation and pilot projects; encourage entry of “outside” attitudes and skills to encourage more critical and imaginative views and approaches.
- *The contribution of immigrants* - settled immigrants, simultaneously outsiders and insiders, have different ways of looking at problems and different priorities; a balance has to be struck between maintaining a separate identity and integrating into the majority community.
- *Using catalysts* - which may be events, organisations and spaces that create opportunities for people with different perspectives to come together, and share ideas, create mutual understanding of the city’s problems and possibilities, develop leadership groups.
- *Balancing cosmopolitanism and locality* – Encourage, host and participate in national and international competitions, exhibitions, trade fairs, the membership of international networks of cities, cultural and educational exchanges, twinning, staff exchanges, and cooperation between research centres. These initiatives can enhance the receptiveness, open-mindedness and international orientation of a city. Again, there is a balance to be struck, this time between cosmopolitanism and the local roots that underpin confidence and sense of direction: thus international initiatives should co-exist with festivals and other celebrations and events strengthening local identity.
- *From multiculturalism to interculturalism* - cultural hybrids matter because creativity arises more from interculturalism than multiculturalism (the latter here meaning the strengthening of separate cultural identities of ethnic minorities – but with the risk of poor communication between cultures). Creativity may be encouraged by fragmentation, but not by marginalisation. Ethnic ghettos are unlikely to contribute to solving the wider problems of cities. Intercultural projects build bridges between the fragments, and produce something new out of the urban multi-cultural patchwork: successful new ideas can be generated through cultural crossovers.
- *Participation is more than a slogan* – encourage it through means such as citizen audits and juries. (The authors suggest using these for such things as the design and management of their housing estates and assessment of public sector organisations. But there is much scope for citizens to be involved in the development of R&D priorities and the design of innovative technology-related programmes. Cf refs inc Citizen Science, VALUE report) Participation creates “ownership” so that people are more likely to become stakeholders in projects they have participated in.
- *Developing creative spaces* - land and buildings at affordable prices, and preferably close to other cultural amenities, need to be made available, where lower financial risk encourages experimentation. There is scope for new types of Science Park and Cultural Industries Quarter, for instance, as well as more market-driven occupation of particular sites (e.g. areas near city centres that are undergoing change – old ports, areas of declining industries, etc.).
- *Early winners and staging posts* - start with easier projects which become “early winners”, helping to build momentum; establish intermediate goals or staging posts to make visible how the city is moving and to generate confidence and enthusiasm. As well as events such as festivals, the authors suggest that other possibilities include new regulations, subsidy schemes; we could add that there might be successful innovation-related actions such as creation of, say, a city-level wireless network or e-payment system.
- *Rethinking urban management* - city management needs to concentrate on strategic oversight and the things it does best and contract out or delegate inappropriate tasks to private, voluntary or semi-public organisations. For such delegation, city stakeholders need vision and leadership - bringing together leaders from local politics, business and the voluntary sector.

Source: Landry and Bianchini, 1995.

growth of an underclass in cities where there is inflation in property prices and few opportunities for upward mobility on the part of people lacking the right sort of creativity. On the other hand, many urbanists can point to success stories in regeneration, where the goal of a creative city does seem to have been at least brought closer by the activities of local and sometimes national political authorities.²¹

Charles Landry is a European writer on creative cities whose work is often contrasted to Florida's. Box 6 presents a list of initiatives he has identified on the basis of studies of good practice, which appear to work together to create more creative cities. While he rarely discusses innovation more broadly, many of the topics specified can be seen to bear on technological and other innovation; and many are also stressing cultural development. It would be interesting to explore how far the overlap between these elements could be extended.

2.5 *Rules and Regulations in Spatial Contexts*

2.5.1 Culture and Innovation Systems

Box 7: The Components of a National (Regional or even Sectoral) Innovation System

Institutions are sets of habits, routines, rules, norms and laws, which regulate the relationships between people and shape human interaction. Organisations or formal institutions are structures with explicit goals and purposes (banks, universities, firms etc).

There is a well developed literature on the importance of national institutional frameworks for fostering an innovation-friendly environment. Current interest in 'national innovation systems' was triggered by Freeman (1987), Lundvall (1992) and Nelson (1993), who demonstrated the impact of different institutional arrangements on a country's innovative capacity. They tended to examine institutions and relationships of a rather formal kind, and to pay less attention to culture in our sense, however – even though the definition in Box 7 mentions rules and routines. Still, these authors will often assert or acknowledge that the institutions that comprise a national innovation system, including firms, the education system, the regulatory environment, the legislative environment and the financial system, are influenced by the cultural context of a particular country and in turn affect behaviour and ultimately 'culture'.

Social norms and values are reproduced by the education system - for example the degree of egalitarianism or elitism in the system affects the capacity of the whole workforce to contribute to innovation. Historical features of countries are reflected in a heritage of educational structures, such as which subjects are given more or less emphasis in curricula, whether the focus is on vocational or academic education, what

²¹ Thus Hospers (2003) accepts that local governments cannot simply create local knowledge, creativity and innovation "from scratch". But, he concludes, the experiences of creative cities (Austin, Barcelona, etc.) demonstrate that local policymakers can help increase the scope for the emergence of urban creativity, by providing the appropriate underlying framework conditions.

the status of science and engineering is. There was a longstanding line of analysis that related long-term UK poor economic performance to factors stemming from the imperial past, which led to education training people to run an empire, not to manage and work in modern institutions and enterprises. In Britain engineering is said to be downgraded, while US engineering schools have practically as high a status as do medical schools, and French polytechnics and mining schools are elite institutions. But how do we account for more recent UK economic performance and some of the results presented earlier on entrepreneurship? Has there been a massive cultural shift – some commentators would argue so, but evidence is rather scarce on the ground. And certainly problems persist in recruitment of scientists and engineers (alleviated by openness to immigration, perhaps).

Likewise, there are cultural dimensions to the functioning of the financial system that might well impact on the innovative climate of a country, such as the long term financial support, available for example in Germany and Japan, as opposed to the relatively short-term financial support, found for example on the capital markets in the UK (Tylecote, 2007). Conversely, the availability of venture capital (and private money more generally) in the US is often cited as an important facilitator of innovative activity (Florida and Kenney, 1988). Legal institutions are also culturally shaped, so that the intellectual property right (IPR) regime may impact on innovative activity and culture through, for example, way that the Japanese IPR system encourages reverse engineering and modifications rather than radical innovations, compared to both France and the USA (Maskus and McDaniel, 1999).

Innovation systems research stresses that the connections and linkages between institutions are as important as the institutions themselves. For example, though the small size of Nordic countries could be seen as a disadvantage in terms of market size and absolute number of innovative people, the connections that exist between institutions have been seen to confer a significant advantage to innovative activity (Walsh, 1988). Representatives of the national ‘culture’, such as Trade Unions and political organisations can have a direct impact on regulation impacting innovation. For example the relative success of the environmentalists in the 1980s in Germany had an important effect on regulations about pollution; and the adoption of the ‘precautionary principle’ for genetically modified organisms (GMOs) in Europe demonstrates the impact of a wider culture on formulation of regulation.

Culture may shape institutional arrangements, so that what may appear to be similar regulatory regimes may differ in practice to a considerable extent. And there is also evidence that institutions can encourage an innovation-friendly culture. For example entrepreneurial behaviour may be promoted by making venture capital available, increasing the variety of sources of funding (both long term and short term), promoting industry-academia relationships, reducing individual risk through limited partnerships, developing positive mechanisms for bankruptcy, and the like. These would be expected to change perceptions of risk and opportunity as discussed earlier.

2.5.2 Regulations and Cultures

One line of research has been to examine cross-national variations in acceptance and implementation of major (usually controversial) new technologies – for example studies in Bauer (1995). Among these are studies of GMOs and food biotechnology (for a sophisticated analysis of GM tomato debate see Harvey *et al*, 2002). Jasanoff

(2005) also examines food biotechnology. She argues that U.S. debate and regulation focuses narrowly on risk, with a more ‘technocratic’ regulation process. In Europe (Germany in particular) a much more important role is played by broader value- and worldview-related dimensions. Outcomes may be similar across these different systems (Jasanoff, 1995), or diverge – a “messy” political process is involved. (Jasanoff goes on to argue that the difficulties of harmonising standards across countries and cultures requires seeing harmonisation as “reciprocal commentary” rather than a process that can be reduced to purely scientific and technical analysis. Reciprocal commentary means the exchange among partners of qualitative (not only quantitative) information about prior practices. Feedback mechanisms are required to enable appreciation of successes or failures across countries, to promote mutual learning and shared understanding of each others’ institutions, culture and history.).

This report cannot hope to examine the numerous relations between culture, specific institutions and institutional arrangements, and innovation processes, around the world. In any case, it is not clear that there is really a great deal of systematic published research on the topic. The OECD has generated a great deal of work through its PUMA group and studies of regulatory regimes. [Table 3](#) sets out the indicators used here. Some of these are clearly relevant to entrepreneurship (for example regulatory burdens on start-ups – section 3) and to international competition (which should speed diffusion of new approaches and spur innovation – sections 2, 4 and elsewhere). But there is little work on the scale of impact of such issues on innovation.

One study for the EC (Blind *et al* 2004) does examine the interactions of regulations and innovation. In terms of comparative work it is limited, treating the EU mainly as a whole; its rich descriptive accounts of regulatory environments are rather hard to summarise. [Table 4](#) reproduces a summary account of the general relations between regulation and innovation, without providing the sort of analysis that would allow us to contrast different regulatory cultures. Blind and his colleagues do provide some survey data for the EU indicating that research institutes tend to see regulations more favourably as creating opportunities for R&D, while firms tend to be more negative. But in general regulations appear as a relatively minor hindrance for innovation (a result that is borne out by CIS analyses as well – though remember that we are not dealing with very small businesses in these samples).

We will move on to focus on organisational issues, especially those applying within firms. After all, it is in firms that much, perhaps most, innovation takes place. The discussion of entrepreneurship above has great significance for innovative start-ups. But there is much evidence demonstrating that most R&D and organised innovation management takes place in larger firms. More radical innovations tend to emerge from larger firms too (Tether *et al*, 1997).

Table 3 Basic data points in the OECD regulatory indicators questionnaire 2003.

Section	Data points	Short description
Section 1: General policies 1.1 Firm ownership, control and legal status 1.2 Antitrust exclusion and exemptions 1.3 Market access, market dominance and vertical separation of network sectors	223 129 6 88	Section 1 focuses on public ownership, market access and competition issues, market structure and vertical relationships in utilities and other network industries.
Section 2: Regulatory and administrative procedures 2.1 Regulation 2.2 The treatment of foreign parties	44 32 12	Section 2 focuses on regulatory processes and capacities in the public administration.
Section 3: Administrative requirements for business start-ups	129	Section 3 focuses on the administrative requirements that entrepreneurs must satisfy in order to start a business.
Section 4: Regulation of professional services 4.1 Exclusive and shared exclusive tasks 4.2 Entry requirements 4.3 Treatment of foreign professionals 4.4 Regulations on market behaviour	227 83 36 32 76	Section 4 focuses on regulations that may have an impact on the accounting, legal services, engineering and architectural professions.
Section 5: Regulation in transport industries 5.1 Road freight 5.2 Railways 5.3 Air travel (non freight)	131 25 74 32	Section 5 focuses on regulations affecting access, business conduct and industry and market structure in three transport sectors: road freight, railways and passenger air travel.
Section 6: Regulation in the retail distribution industry 6.1 Regulatory environment 6.2 Industry behaviour 6.3 Prices	51 31 13 7	Section 6 focuses on regulations affecting access and business conduct in the retail sector
Total	805	

Source: Conway et al. (2005)

Table 4 Regulation and Innovation

Type of Regulation	Positive Impact on Innovation	Negative Impact on Innovation
Economic regulation		
Antitrust or procompetition regulation	eases and enforces innovation	prohibits (R&D) alliances
Protection of infant industries (R&D subsidies, barriers to entry, mergers)	allows costly and risky innovations	continued protection does not enforce innovative activities
Public utilities: rate of return regulations; pricing at marginal costs	rents available for R&D and innovation	little and biased incentives to innovate
Public utilities: price cap	incentives to reach productivity gains, if regulated company can capture parts of the gains	-
Public utilities: competition	-	high price pressure and low profit margins do not allow to invest in innovation
Protection of selected industries (e.g. aerospace)	funds available for large R&D projects and innovation	no competitive pressure to innovate
Social regulation		
Environmental regulations	create incentives for new processes creating less environmental damage and for the development of new products	restrict the innovative activities of firms and hamper the competitiveness and therefore their innovative capacity regarding end-of-pipe technologies
Safety regulations	increase acceptance of new products among consumers	additional restrictions for innovators
Public goods	provide infrastructure for innovative activities	reduced private sources for innovative activities
Administrative regulation		
Product liability	producer liability increases the acceptance of new products among early adopters	too high liability reduces the incentive for producers of innovative goods
Intellectual property rights	additional incentives to innovate	additional protection for monopolistic practices is an obstacle for the diffusion of new technologies and products

Source: Blind *et al* (2004) based on Brousseau (1998).

3 Organisational Culture and Innovation

The term ‘culture’ became highly fashionable in management and organisational research in the 1980s – following increased emphasis on cultural issues by management gurus and some top managers themselves. In a time of major organisational restructuring, cultural change was seen as necessary to achieve organisation-wide consensus and shared values. Changing the ‘organisational culture’ was promoted as a way for managers to improve productivity and organisational performance more generally. Critics argued that culture cannot be constructed from top-down initiatives; and others argues that organisations are composed of distinct subgroup cultures rather than embodying one homogenous culture. However, the research literature has sought to identify cultural characteristics of innovative organisations on the basis that the culture of an organisation is a significant contributing factor in the extent to which creativity and innovation occur in the organisation (Johnson, 1996, Judge *et al*, 1997, Tesluk *et al*, 1997, Tushman and O’Reilly, 1997, Ahmed, 1998, Pheysey, 1993 and Robbins, 1996).

Organisational culture is manifested in the typical characteristics of the organisation and can be defined as a set of core values, behavioural norms, artefacts and behavioural patterns which govern the way people in an organisation interact with each other and invest their energy in their jobs and in the organisation at large (van Muijen *et al*, 1998). It refers to a set of basic assumptions that have worked so well in the past that they are accepted as valid within the organisation. (Martins and Terblanche, 2003). Organisational culture can complement rational managerial tools, playing an indirect role in influencing behaviour, and filling the gap between formal mission statements and what actually occurs. It can thus stimulate or hinder creativity and innovation (Glor, 1997, Tushman and O’Reilly, 1997)

Tushman and O’Reilly (1997) argue that innovation culture lies at the heart of organisation innovation and influences creativity and innovation in main two ways:

- 1) *Internal integration*; i.e. socialising of new members. In accordance with shared norms, individuals will make assumptions about whether creative and innovative behaviour forms part of the way in which the organisation operates and they should behave.
- 2) *Coordination*; i.e. making sense of the environment in terms of acceptable behaviour and providing social glue that binds the organisation together. The basic values, assumptions and beliefs of employees are reflected as structures, policy, practices, management practices and procedures at the organisational level. These determine how individuals come to perceive what is considered valuable and how they should act in the workplace (Tushman and O’Reilly, 1997).

These two functions are complementary. Managers of successful and innovative organisations try to create an institutional framework in which creativity and innovation will be accepted as basic cultural norms. Management studies often highlight the cultural characteristics associated with successful innovation through present an ‘ideal type’ of innovative organisation.

A convenient summary of the features observed in innovative organisations and featured prominently in the literature is reproduced in Table 5.

Table 5 Several Factors Important to an Innovative Climate

Negative	←	Factor	→	Positive
short	←	horizon	→	long
kept out	←	maverick	→	accepted
punished	←	failures	→	tolerated
formal	←	communication	→	informal
kept out	←	uncertainty	→	accepted
analyses	←	planning	→	action
means	←	planning	→	opportunities
closed	←	external co-operation	→	open
autocratic	←	decision-making	→	participative
internal	←	orientation	→	customer
vague	←	strategy	→	clear

Source: van der Meer, 2007.

These factors are discussed in relation to the attitudes and values in organisations in section 3.1 below. Section 3.2 relates them to the rules and regulations in organisations that impact on the organisations culture and innovative ability. Attitudes and values impact on the rules and regulations in an organisation, and vice versa. As a result each factor can be discussed in terms of a behavioural or a structural component, meaning that there may be some overlap between sections.

3.1 Attitudes and Values in Organisations

Perhaps the most difficult to measure, and hotly debated, element of organisational culture is the behaviour that encourages innovation. The literature tends to focus on the role managers can have on promoting 'positive' behaviour. It is agreed that values and norms that encourage innovation manifest themselves in specific behavioural forms that promote or inhibit creativity and innovation. By focusing on behaviours it may be possible for managers to intervene in the organisational culture.

A commonly cited differentiating feature between successfully innovative organisations and less innovative organisations is the way mistakes by employees are dealt with. Mistakes can be ignored, covered up, used to punish someone or perceived as a learning opportunity (Brodtrick, 1997). It is widely agreed that tolerance of mistakes is an essential element for the development of an organisational culture that promotes creativity and innovation, for example, it is important to focus on what can be supported rather than what is not viable (Filipczak, 1997). At 3M - an 'ideas-driven company' that is a benchmark for other large firms pursuing innovative activity - the acceptance of failure is perceived as necessary for an entrepreneurial culture and the sort of learning that can come from mistakes is captured in the phrase 'well intentioned failure'.

A large body of the strategic management literature associates **risk** with novelty, an attribute associated with innovative activity; and attitudes towards risk have been highlighted in the preceding discussion on the risk society. Taking risks inevitably means making some mistakes and - in addition to a positive organisational culture towards risk taking - the reward system must be conducive to risk taking in order to foster an innovative environment. It is widely agreed that in order to foster an

innovative environment employees should be rewarded for risk taking, generating ideas and experimenting rather than simply rewarded for using well proven and trusted methods to generate fault free work. Too much emphasis on productivity and downsizing have been identified by some commentators as having negative effects on innovation as they do not space or incentive to develop creative solutions. But encouraging risk-taking may also require limits of its own. Some activities may run ethical risks and/or endanger the organisation or its stakeholders directly or indirectly. Finding a balance that does not squash creativity is a challenge (Filipczaek, 1997).

From an organisational perspective risk taking can be defined as the “the extent to which there is uncertainty about whether potential significant and/or disappointing outcomes of decisions will be realised” (Sitkin and Pablo, 1992, p10). There is some evidence that the risk propensity of entrepreneurs tends to be greater than that of managers (Stewart and Roth, 2001). Likewise, the attitude to risk by the management of an organisation can have an effect on the overall culture concerning risk and the innovative capacity of an organisation.

Tolerance is a term found in much of the research on innovation culture, and we have already encountered the use of the idea by Florida and Landry. Florida identifies tolerance of diversity as an attractive characteristic of highly creative spaces, one which encourages creative people to live and work in them. The analysis could clearly apply to organisations as well as to cities, and their ability to recruit creative people as well as their ability to use them well.

The issue of embracing diversity is much discussed in the management literature, including ensuring working teams are composed of different ‘types’ of individuals, women and ethnic minorities are visible at the senior management level, and that managers promote multi-disciplinary and multi-ethnic organisations. Tolerance of differences allows diversity to exist and flourish (Siegel and Kaemmerer, 1978, Scott and Bruce, 1996) and intolerant organisations inhibit innovations by restricting employees to uniform menus of expected behaviours (Zaltman *et al*, 1973, King, 1990). Issues of immigration have also been raised in policy and organisational research and the mobility of labour, particularly highly skilled and entrepreneurial individuals is cited as a contributing factor to the dominance of the US economy in many technological and creative industries (remember Saxenian’s research in Box 4 in Section 1). Firms apply this approach by actively recruiting women and under represented ethnic minorities in white and male dominated areas whilst simultaneously using psychometric testing to ensure the inclusion of different personality types within the organisation.

Conversely psychometric testing is regularly used by firms to hire similar types of individuals (regardless of their gender or ethnic/national background) in an attempt to ensure a level of cultural homogeneity and therefore perceived harmony. While diversity may be important for creativity, so too may shared values (rather like technological innovation sometimes needing to progress on the basis of standards). At least some commonality might facilitate communication and allow for more rapid innovation in some circumstances (especially if people with similar values are able to draw on very diverse experiences and knowledge). A shared basis for communication - within which diverse employee experiences and knowledge could be expressed - might allow for more rapid innovation. Team-building activities are employed in

order to establish a localised culture of cooperation in an organisation; one of the authors encountered such methods being used in a chemicals firm that was forced to accelerate its innovation processes and combine new sorts of knowledge in order to cope with the challenge of developing and commercialising alternatives to CFCs, for instance.

Another aspect of organisational culture, the culture of continuous learning is promoted by a number of researchers as a tool to encourage creativity and innovation (Arad *et al*, 1997, Lock and Kirkpatrick, 1995, Samaha, 1996). In addition to tolerance of mistakes, tolerance of conflict and handling conflict constructively have been identified as important organisational values associated with innovative organisations (Mumford *et al*, 1997, Judge *et al*, 1997). Conflict is an essential element of the creative and innovative process and enabling conflict whilst ensuring it does not break down trust is a difficult balance to achieve. The management literature recommends training personnel in the process of constructive confrontation. Organisations can encourage their personnel to be inquisitive, to talk to each other and outsiders, keep knowledge and skills up to date, developing creative thinking. Finally, a significant characteristic identified across the literature is that support for change is an important value held by successfully innovative firms and managers can support change by looking for new and improved ways of working, creating a vision that emphasises change and revealing a positive attitude to change (Arad *et al*, 1997, Tushman and O'Reilly, 1997), e.g. through asking employees to indicate how they intend to change their working methods during their annual review.

3.2 Rules and Regulations in Organisations

Attitudes and values are expressed through behaviours, and behaviour is heavily influenced by the rules and regulations of the overall organisation. So, in principle, an organisation can promote innovative activity by identifying the characteristics associated with successful innovation and developing context-specific routines to promote behaviours associated with these characteristics. An organisation wishing to promote risk taking would need to consider what behaviour is encouraged/discouraged by its existing formal rules and regulations and alter them accordingly where necessary. (For example, by introducing reward systems, that do not conflict with existing rules, for risk taking; or by putting procedures in place to identify lessons learnt from unsuccessful risk taking activity without undermining the individuals involved.) Each individual organisation operates within a specific cultural environment. The heterogeneity of this cultural context makes it difficult to draw sweeping, 'how to' conclusions for organisations wishing to promote innovative behaviour within their particular nexus.

It is generally agreed that when work is organised to promote learning and problem solving, innovation is supported. There is very little quantitative survey based research focusing exploring what organisational environments promote learning and innovation on a wide European basis. However, Arundel *et al* (2006) used the 3rd European Survey of working conditions and the CIS-3 to develop an EU-wide mapping of the adoption of organisational practices and policies associated with innovative activity. They argue that the structure of how people work and learn may be deeply rooted in the national innovation system. This would imply that attempts to benchmark innovation 'best practice' may only present the 'tip of the iceberg'.

The authors selected indicators on basis of points raised in the literatures on high performance work (for example, the diffusion of Japanese style organisational practices) and on the relation between organisational design and innovation. They analysed the survey data to identify 4 basic systems of work organisation.

- 1) Discretionary Learning – associated with high autonomy, learning, and task complexity.
- 2) Lean Production – associated with low employee discretion, job rotation, team work, quality rules, bureaucracy.
- 3) Flexible Taylorism – core work practices, low discretion, low problem solving.
- 4) Traditional – machine bureaucracies, low employee discretion.

Figure 9 presents some basic results. The researchers found that the discretionary learning system was most widely diffused in the Nordic countries and Netherlands, to a lesser extent in Germany and Austria but not in Ireland or Southern Europe. In comparison the lean production model was found to be most widely diffused in the UK, Ireland and Spain, with limited diffusion in France. Conversely the Taylorist model was most frequently found in Southern Europe, Ireland and Italy. The traditional model was found in Greece and Italy with some limited diffusion in Germany, Sweden, Belgium, Spain and Portugal.

As the discretionary learning model is generally positively correlated with innovative behaviour (endogenous, adoption and radical) then these findings support the existing perception of the Nordic countries as successful innovators. In comparison Southern European countries, the UK, Italy, Greece, Belgium and Portugal are generally perceived as being less innovative.

The UK is an interesting case; the country is often perceived as inventive (high patent rates etc.) but less successful at commercialisation. Yet if we consider Figure 1 in Section 1 then the UK is on the trend line for entrepreneurial activity, neither having high or low levels of early stage entrepreneurs. In Arundel *et al's* (2006) study, the UK is identified as the only country within the group of European high training nations where the lean form of work organisation, usually associated with the Japanese J form firm, is more widely diffused than the discretionary learning model, associated with high autonomy, learning and task complexity (and not insignificantly) in-house innovation of a more radical nature. This leads the authors to consider what 'unexplained' factors (firm size, industry structure and occupation had already been controlled for) that influence organisational practices are. The authors find a positive relationship between the relative frequency of discretionary learning and a measure of the level of generalised trust that is commonly used in the literature on social capital and productivity growth. The measure of trust is based on a question in the World Values Survey; 'Generally speaking would you say that most people can be trusted, or that you can't be too careful in dealing with people?'. For the EU 15, the percentage of the respondents saying that most people can be trusted ranged from a low of 12.3 percent for Portugal to a high of 66.5 percent for Denmark. One way to interpret these results is that high levels of trust support high levels of autonomy in work whereas low levels of trust tend to give rise to relatively rule-bound and hierarchical forms of organisation.

The authors suggest that the position of the UK as a high training nation which does not use the discretionary learning model reflects the low levels of generalised trust in

comparison to the Nordic countries where discretionary learning is the most widely diffused organisational form. Additionally, although organisations in the UK have adopted best practice models of work organisation associated with lean production and incremental innovation there is a tendency towards bureaucratic and rule based organisational structures and an extremely high level of non-innovating firms in the British economy. It is suggested that the low levels of generalised trust in the British culture have impacted on employees discretion to organise work and problem solve, either because they are adverse to the risk (due to lack of trust) or because managers are unwilling to allow discretion (due to lack of trust). As a result the lean production methods in use in the UK are not as 'effective' as when employed within the Japanese culture.

Related to this Arundel *et al* (2007) found that Finland, Germany and Luxembourg had the highest percentage of firms who could be classified as strategic and intermittent innovators. Whereas in Spain, Greece and the UK over 80% of firms were either adopters of innovations or non-innovators. This suggests that large differences within Europe in national innovation performance could partly be linked to national differences in the distribution of different types of practices. The variations of practices across nation states could not simply be explained by different economic structures. They would seem to reflect historically inherited management-worker relations, attitudes to organisational innovation, and the like. National culture, however we conceptualise it, does seem to have an influence. There should be a lesson here for those seeking to transfer best practice between nations – they need to consider the specific underlying cultural contexts.

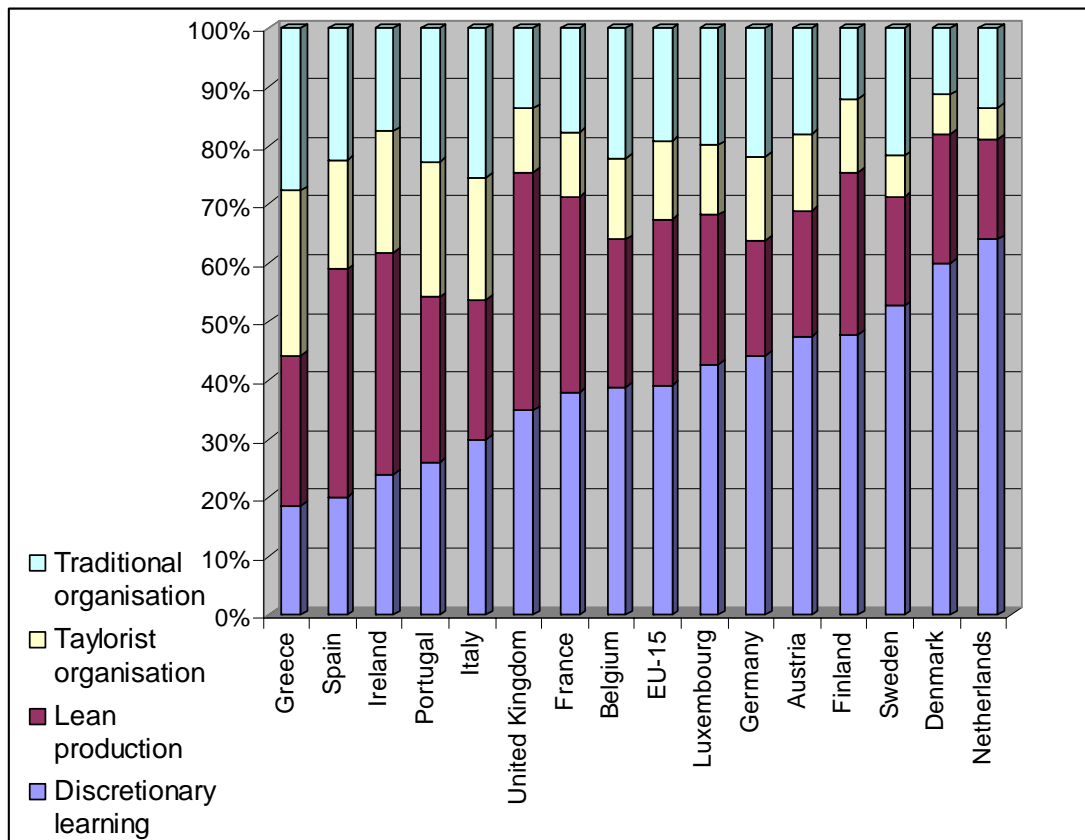
It should be noted that multiple forms of work organisation can be used in the same organisation; studies like this are likely to pick up mainly the dominant model. It is also not straightforward to relate organisational forms to innovation, but Arundel *et al* draw on earlier work on the propensities for different national economies to display one or the other style of innovation (Strategic innovators; Intermittent innovators; Technology modifiers; and Technology adopters). Countries seem to show related patterns of organisational culture and innovative style. This supports the idea that it is not just a matter of culture affecting innovation (ASSUMPTION A), but also that the nature of the innovation and innovation process are being shaped by cultural factors.²²

The management literature concerned with identifying characteristics associated with successful innovative organisations tends not to differentiate between the different patterns of organisational culture and innovation style. The relationship between work practices, innovation and economic development are discussed yet there remains little robust cross-country analysis of innovation culture at the European level. Instead research is often fragmented and focused on specific issues within the overall innovative climate, for example, the relationship between corporate governance and innovative activity (for example co-determination in Germany) as an expression of national culture that impacts on work organisation and ultimately innovation. At the firm level characteristics of innovative organisations are usually identified and promoted as mechanisms for organisations to promote innovative activity. These can

²² Arundel *et al* also display suggestive relationships between their measures of organisational culture and measures of trust, for example, in this case being drawn from the same World Value Survey data that Inglehart uses. Perhaps there are more overlaps between these lines of analysis than explored so far.

be useful points of discussion though it should be emphasised again that when seeking to transfer best practice the underlying cultural context should be carefully considered.

Figure 9: Styles of Industrial Organisation across EU countries



Source: derived from data presented in Arundel *et al* (2007)

The mechanisms used to promote the development and uptake of ideas are varied. They include champions, task forces, venture teams, skunk works, spin-offs, enabling acquisitions, spin-ins, venture capital, licensing, innovative budgets, partnering, listening posts and others (van der Meer, 1996). The relevance and importance of these mechanisms will vary according to the sector and business the firm is in, for example highly scientific organisations with formalised R&D departments operate in a very different manner to many services firms. However, some of the more cultural dimensions of the most widely cited mechanisms, and associated rules and regulations, are addressed in the following sub sections.

3.2.1 Structure

The organisational structure can emphasise certain goals which have an influence on the promotion of creativity and innovation. A flat structure, autonomy and work teams promote innovation whereas the literature generally agrees that specialisation, formalisation, standardisation and centralisation inhibit innovation (Arad *et al*, 1997 and CIMA Study Text 1996). Values such as flexibility, freedom and cooperative teamwork have been shown to promote creativity and innovation - whereas rigidity, control, predictability, stability and order will hinder creativity and ultimately

innovation. Conversely, commercialisation often requires control and order – the tension between incubating a creative/invention culture and a commercialisation/innovation culture is discussed later. There has been much written about the small, responsive and innovative firm, able to react quickly to changes in its competitive environment. Attempts have been made to replicate smaller, flatter working environments within large organisations in an attempt to increase their innovative capacity, for example, the recent internal restructuring at GSK and GE. The perceived disadvantages of large and overly bureaucratic organisations in terms of innovative ability have implications for public sector organisations (Parker and Bradley, 2000) which are often characterised by their scale and complexity. Public sector organisations are often characterised by their risk awareness, an issue related to Beck's risk society as discussed earlier. The emphasis on audit trails, accountability and transparency coupled with a prominent 'blame culture', hierarchical structure and high levels of employee risk adversity all contribute to the image of public organisations as un-innovative.

3.2.2 Strategy

The organisational strategy can have a significant impact on innovation and helps create a shared vision and mission amongst employees, usually focused on the future. There are strong arguments that in order to promote innovation this should be customer-and market-orientated. This relates to the involvement of users in the innovation process (von Hippel, 1976) and the concept of 'Open Innovation' which is discussed briefly later. In addition to having an organisational strategy employees need to understand the mission and the gap between the current reality and the desired future position of the organisation. Judge *et al* (1997) describe successful innovation as 'chaos within guidelines' – wherein management prescribes a set of strategic goals, but allows personnel great freedom within the context of the goals. Personal and organisational goals that emphasise quality rather than effectiveness have also been identified as improving levels of innovation (Hall, cited in Arad *et al*, 1997).

3.2.3 Communication

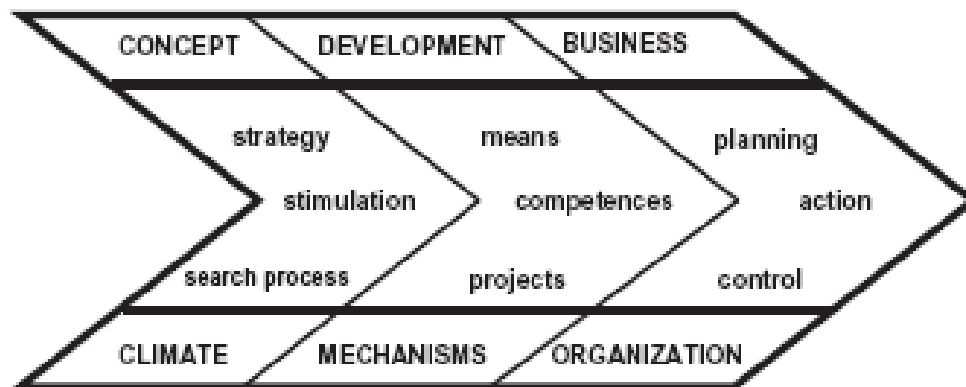
Successfully innovative organisations have been identified as engaging in supportive open and transparent communication which is based on trust. An 'open door' policy has been identified as one mechanism for managers and employees to increase organisational communication (Filipczak, 1997, Fohman and Pascarella, 1990, Samaha, 1996). 'Connectedness' between employees' is believed to facilitate interaction and exchange of information enabling formal and informal flows of information which in turn enhance innovativeness (Kohli and Jaworski, 1990, Rose and Shoham 2002). The Japanese literature on innovative companies and the transformation of knowledge from one kind to another (see especially Nonaka and Takeuchi, 1995), which has been taken up by numerous Western writers (such as Dawson, 2000), provides interesting insights as to the ways in which this can happen. There has been much written in the knowledge management literature about increasing information flows across the organisation using formal and informal techniques - from the uploading of information to intranets to encouraging discussions around the 'water cooler'. Harnessing the knowledge and skills of employees is a consistent theme in the organisational and management research and is widely agreed to be a pre-requisite to enhancing the organisations innovative capability. Politics, fairness and justice have been found to have substantial impacts on the organisational climate (Shoham *et al*, 2003). Over politicised organisational environments may

reduce innovativeness by redirecting employees’ energies away from the organisational mission and reducing the perception of fairness and justice. Additionally, intra-organisational conflicts can hinder innovativeness if they have a negative impact on inter-departmental communications. However, as previously discussed, conflict is an essential part of the innovation process. Disagreement is acceptable and constructive conflict should be encouraged as it offers an opportunity to expose paradoxes, conflict and dilemmas.

3.2.4 Creativity versus Innovation

So far we have discussed the characteristics widely agreed as being associated with highly innovative organisations. However, it should be made clear that organisations that focus only on promoting a creative environment, can suffer from lower levels innovative activity as a whole. Innovation involves not only invention and creativity, but also development, exploitation, commercialisation, diffusion and so on. Very different skills, knowledge, structures and cultures are required for inventive (or creative) activities, as compared to innovative (or commercialisation) activities. It could be inferred that the tendency for hierarchy to dominate social and economic life at all levels results in environments heavily dependent on rules, procedures and regulations and predisposes the literature on innovation and culture to concentrate on stimulating creativity. However, an unintended consequence of this may be an under representation in the literature of the importance of routines and procedures (and traditional business practices) for the commercialisation of new ideas. Succinctly, the demands of creativity and innovation may conflict. Figure 10 identifies 3 (highly linear) stages in the innovation process; van der Meer (2007) argues that managing innovation is about managing paradoxes: what works in the early stages can be detrimental in the later stages. This directly relates to the type of organisational climate or culture being cultivated by the organisation. There is a balance between creativity and turning ideas into a commercial reality which requires different ways of working. The commercialisation of ideas tends to require efficiency, discipline and persistence. A more hierarchical structure and formalised set of policies may be more suitable for conducting innovative (as opposed to inventive) activities and there is a fine balance between creating the right culture for creativity and the right culture and conditions for innovation.

Figure 10: A Three-Staged ‘Linear’ Innovation Process



Source: van der Meer, 2007.

A number of examples of this problem have been identified by Leavy (2005). For example, in 1998 Nokia rebalanced their highly creative organisation with a more fact-based management, in order to take full commercial advantage of its rise to market leadership. Leavy (2005) cites the dot.com crash as a cautionary tale about putting too much faith in creativity and too little value on traditional business discipline and experience; he emphasises the importance of the organisation recognising these different skill sets and instituting them internally. Numerous examples are found in the innovation literature of large industry incumbents being slow to act on radical technological change (often originating outside the boundaries of the firm); whereas new firms are often better positioned (or emerge) to take advantage of these new opportunities. The creation of dedicated biotechnology firms and their relationships with large pharmaceutical companies are a case in point. The small biotechnology companies are characterised by an inventive, exciting culture; however very few biotechnology companies took their products to market independently and made the transition to a larger commercially successful firm. Often relationships between biotechnology and pharmaceutical companies developed to access each others 'complementary capabilities' such as potential new products, new skills, finance, legal expertise, distribution networks etc. These symbiotic relationships are characteristic of periods of radical technical change and are in part representative of the difficulty in marrying routines suitable for innovation and those suitable for invention.

The internal organisation is only one aspect of an innovation system. We have previously discussed the national, regional and sectoral contexts, and noted the role of users and the market (demand - side factors) in the innovation process. One popular (organisational level) concept which may be a useful tool for understanding the wider innovative system – and therefore cultural context – is the 'open innovation' model.

3.2.5 Open Innovation

The concept was popularised by Henry Chesbrough in his 2003 book **Open Innovation**. Open innovation refers to an open (rather than closed) system of innovation concerned with access distributed sources of knowledge. Similar ideas are labelled using terms like distributed innovation systems, networks of innovators. The basic notion here is that increasingly innovation is being conducted beyond the boundaries of the firm, with collaborations among many parties. This is driven by the need to access wide-ranging types and sources of information, and facilitated by new IT. Organisations are encouraged to develop cultures that allow them to make full use of the expertise from competitors, suppliers, universities, and customers. Table 6 uses a rather linear model of innovation to frame some of the mechanisms of open innovation.

Table 6: Some Mechanisms of Open Innovation

Stage	Importing	Exporting
Concept	<ul style="list-style-type: none"> • Creative sessions networking with universities and scientific institutes • Knowledge clusters ‘Open Day’ • Conferences • Fairs • Suppliers and end-users • Licensing in 	<ul style="list-style-type: none"> • Cluster projects • Industry groups • Public-private co-operation • Licensing out
Development	<ul style="list-style-type: none"> • Patent search • Partnering • Spinning in 	<ul style="list-style-type: none"> • Patent brokers • Spinning out
Business	<ul style="list-style-type: none"> • Venturing in 	<ul style="list-style-type: none"> • Venturing out

Source: van der Meer, 2007.

Chesbrough identifies three elements of open innovation: culture, structure and business model. He argues that innovating in an open system requires a different way of thinking to that of a closed system. These differences are summarised in Table 7 below.

Table 7: The Culture of Open Innovation

Contrasting Principles of Closed and Open Innovation	
Closed Innovation Principles	Open Innovation Principles
The smart people in our field work for us	Not all the smart people work for us. We need to work with smart people inside <i>and</i> outside our company.
To profit from R&D, we must discover it, develop it, and ship it ourselves	External R&D can create significant value; internal R&D is needed to claim some portion of that value
If we discover it ourselves, we will get it to market first	We don't have to originate the research to profit from it.
The company that gets an innovation to market first will win.	Building a better business model is better than getting to market first
If we create the most and the best ideas in the industry, we will win	If we make the best use of internal and external ideas, we will win
We should control our innovation process, so that our competitors don't profit from our ideas	We should profit from others' use of our innovation project, and we should buy others' IP whenever it advances our own business model.

Source: van der Meer, 2007.

The open model of innovation is representative of a wider – and well established – discussion in the literature on the shift from internal R&D characterised by Chandlerian firms to more distributed innovation processes. Much has been written about the qualitative change in organisational activity since the 1980s in terms of globalisation, increased collaboration, increased alliances and licensing activity, the increasing complexity of technologies and the increasingly ‘distributed’ nature of knowledge. The open innovation model characterises the resulting shift in behaviour, particularly in relation to successfully innovative organisations. As previously discussed throughout this document a significant finding is that organisational practices do not always translate well to different contexts or produce the expected results. Culture is multi-dimensional and is often highly context specific.

4 Fostering a Culture of Innovation

4.1 General Points

The mini-tudy has identified a huge range of literature relevant to this theme, and summarised and briefly reviewed some of the highlights here. There is clearly much to be gained from more detailed exploration of specific lines of work here, and it is likely that rather specialised literature reviews of this sort might be generated for particular classes of user. We hope that this text will provide a useful introduction to the field.

One major conclusion that we draw from this literature is the need to be attentive to the complexity of the relationships that are encountered. The links between attitudes and values, institutions and regulations, responses to innovative ideas and products, entrepreneurship and risk-taking, and creativity and innovation, are all relevant. These linkages provide the context within which we can talk about the relationships between Innovation and Culture.

It is because of the many elements of this complex that we have to be wary of the assumption that there are direct links between, say, levels of entrepreneurship, or expressions of public acceptance of new technologies, and the innovative performance of an economy. One-to-one mapping is unlikely to be the rule.

But, equally, there are important reasons to consider the wider set of linkages that constitute the relationships between Innovation and Culture. For example, while entrepreneurship and new firms may not be the main sources of some classes of innovation, and while some highly innovative countries may not feature such high levels of entrepreneurial activity, this does not mean that entrepreneurship and innovation are not linked in important ways. Clearly they are, and we have to be sensitive to the way in which these relationships are mediated through different contexts.

Moving on to more specific conclusions and recommendations, it is necessary to follow our broad distinctions between culture as understood as value, attitudes and practices at national and regional levels; issues that arise more in the context of cities and localities; and issues that impinge upon organisations. This makes sense, not least because there are different opportunities for intervention in each of these contexts. Across all of them, though, three points can be made:

1. It is important to be aware of the importance of the cultural dimensions of innovation – the ways in which culture shapes and creates the preconditions for creativity, innovation and diffusion – and of the variety of different dimensions of culture that may be influential, and that may be influenced.
2. It is well worthwhile to examine cases of what appears to be good practice, to establish what practices and policies for fostering supportive relationships between Culture and Innovation have developed (spontaneously or by design) in these cases. This is not “benchmarking” in the sense of identifying approaches that can be transplanted in a “me-too” way: the many elements of the cultural context means that this may often result in failure. Rather, it is “learning by comparing” to use a phrase from Lundvall: it is learning about how the relations between Culture and Innovation are operating in your context

as compared to in the contexts of others, and thus getting a better idea of where and how action might be possible and effective.

3. The discussion has drawn attention to the need to distinguish between inventive/creative, innovative/commercial, and diffusion/adoption activities. It is possible for a country, locality or organisation to be strong on some of these, and weak on others. Ways of identifying the mix and striking an effective balance need to be developed (perhaps along the lines of industry's Balanced Scorecard approach).

4.2 Policy Recommendations: EU, national and regional

Governments cannot create culture in the sense that we have used it here – Cultural Policy is mainly a matter of the cultural industries. Chairman Mao's Cultural Revolution can now be seen to have created widespread disruption, but not to have shifted the soul of China greatly. Governments will often have to recognise and work with the valuable and creative elements of their culture. For example, growing environmentalist values suggest emerging markets for certain goods and services.

But governments can promote certain attitudes and values; they can create the scope for new behaviours and ultimately cultural change. Often they do not do so effectively. A campaign to increase public awareness of an issue can be seen as heavy-handed or even oppressive interference, it can meet with derision or backlash. This has been the case with some campaigns against racism and in favour of healthy eating, for example.

Some of the research into values suggests that these are deeply-rooted perspectives that individuals hold on the world, grounded in childhood experience, and very hard to shift. However, the way in which these translate into attitudes and behaviours in specific context is very much a matter of perceptions about the extent to which innovations, for example, impinge upon these values; there is liable also to be the issues of how value conflicts are resolved at the individual and group level. Policy may have a role to play in promoting awareness of particular issues and implications of innovation in general and of specific innovations and sets of innovations. Policy may also seek to moderate or offset one-sided presentation of such claims by industrial lobbies and pressure groups, for example. Educational and media policy could empower citizens to make more informed judgements about such media and everyday presentations, and provide them with capability to established more informed perspectives on the innovation(s) in question. This may not always mean that publics will adopt the views that specific policymakers would prefer – deliberative consultations about nuclear power may not build wide acceptance for the necessity for nuclear power programmes for example. The process may raise awareness of safeguards, regulations, evidence, and review processes that need to be associated with a particular path of innovation. For some actors this may be seen as raising the barriers to innovation and thus threatening competitiveness. For others it may seem necessary application of precautionary principles, and as creating the possibility for new sorts of innovation with better social alignment.

The implication thus is that efforts to shape attitudes and values, and regulations and institutions, so as to render them more conducive to innovation, will have to be related together. The issue may not be simply one of accelerating innovation, but also one of what sort of innovation and innovation process is to be facilitated.

One specific issue that the mini-study raises is entrepreneurialism. There is no need to add to the consensus that entrepreneurial values (or at least ethically informed entrepreneurial values) should be more widely fostered. Indeed, such values are probably best viewed as one expression of what psychologists refer to as an “internal locus of control” rather than “learned helplessness”, which appears to be beneficial in areas of life other than just the economic sphere. There is also wide agreement that regulatory barriers to entrepreneurial activity should be reformed (simplified and streamlined). But relatively few efforts here focus on the link between these elements and innovation. Perhaps there are solutions to be found in efforts to use training and lifelong learning to enhance creativity, promote better-grounded approaches to risk-taking (as part of business planning for example), and building bridges between creativity, invention and commercial innovation. Awareness-raising could be supported by competitions and awards, demonstrators and media coverage of success stories.

4.3 Cities and Regions

There is a strong – some would say strident – voicing of opinion that cities are where much innovation takes place, being focal points for bringing together creative people of all types. The cultural and creative industries have a role to play in making a city culture a desirable one in which to work and live, and thus one that can attract and retain innovative producers and consumers. But also there are elements of culture such as tolerance and openness, of social networks and meeting places, of space and events where innovation can be demonstrated and celebrated, that are emphasised as important.

This mini-study has reviewed a few of the many contributions here, and our conclusion is that there is some substance to criticisms of the “creative city” approach. It is plausible that many of the things that render cities attractive and vital locations for innovation are a matter of historical and institutional heritage, and cannot simply be invoked or imported at one swoop. It is likely that our indicators of creativity are flawed and that improved understanding requires more of a systems view of cities functioning and the interrelations between cities. But, despite such criticisms, there does seem to be real substance to the arguments that much of what matters in innovation systems is constituted at local and especially at city levels, and that there is scope for facilitating improved functioning of such systems. The sorts of recommendation proposed by authors like Landry (summarised in a Box above) should be seriously considered by all those concerned with increasing creativity and innovation in their cities. But, as warned above, simply imitating or transplanting a practice from one city to another may not be a good way of expending resources – it is necessary to undertake some serious examination of the local cultural context and the “fit” that would be achieved here.

4.4 Management Issues

As in the “creative cities” area, management studies show no shortage of prescriptions for what makes creative organisations. And again there are critics, who will cavil at talk of organisational cultures (*whose* culture?), challenge attempts at reform, and dismiss such efforts as diversions from the main function of profit-making. The case that organisational culture, however measured and conceived, can have an important impact on innovative performance does seem to be a strong one. Systematic evidence

going beyond case studies has been slow in emerging, but we are beginning to see comparative and even cross-national work that points in this direction.

The particular types of creativity that an organisation's leaders (and stakeholders) may wish to foster are liable to vary across organisations and over time. Whether the emphasis should be on open innovation, technology transfer, fostering inventive practices or focusing on systematic exploitation of knowledge is something that will require context-specific answers. The management studies literature has suggested various ways of shifting organisational culture in support of different goals. This literature makes many useful and concrete suggestions, even though overnight success may not always be within grasp. A key message is that orientation to innovation and creativity should always be among these goals, since these attributes look like being increasingly central to the competitiveness of firm and the effectiveness and legitimacy of public services.

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