Technology, Talent and Tolerance in European Cities: A Comparative Analysis  
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Full Report of Research Activities and Results

Introduction

In his book, *The Rise of the Creative Class*, Richard Florida argues that regional economic outcomes are tied to the underlying conditions that facilitate creativity and diversity. Thus the Creative Class thesis suggests that the ability to attract creativity and to be open to diverse groups of people of different ethnic, racial and lifestyle groups provides distinct advantages to regions in generating innovations, growing and attracting high-technology industries, and spurring economic growth. In this project we investigated the extent to which such processes prevailed as Florida found in, first the US and later, Canada. Thus we tested his analysis on the relationship between creativity, human capital, and high-technology industries in the UK and, with European Science Foundation programme partners, several European countries.

To this end, the Creative Class and its subgroups were collectively defined and identified. We then constructed quality of place indicators relating to tolerance, diversity, creativity and cultural opportunity. To these were added measures of public provision and social cohesion. Data for the UK were primarily derived from the 2001 Census of Population and the Annual Business Inquiry, and analysed by means of correlation and regression analyses. Qualitative case studies augmented the quantitative analyses. A parallel methodology was followed by research partners in the Netherlands, Sweden, Norway, Denmark, Finland and Germany.

Background

Much of the recent interest in the development of creativity has drawn upon Richard Florida’s (2002b) book ‘The Rise of the Creative Class’. Whereas in the ‘Industrial Age’ classical and neo-classical economic theory held that ‘people followed jobs’, in the modern
‘Knowledge Economy’ Florida shows how ‘jobs follow talented people’. That is, places that display ‘Creative Class’ characteristics, meaning a high presence of professionals, technologists and bohemians, performed best economically in recent years.

In particular, the ability to attract creative people in arts and cultural fields and to be open to diverse groups of people of different ethnic, racial and lifestyle groups provides distinct advantages to regions in generating innovations, growing and attracting high-technology industries, and spurring economic growth (Florida, 2002b; Gertler, et al. 2002). Thus according to the results from Florida et al.’s research the underlying hypothesis is that the presence and concentration of bohemians in an area creates an environment or milieu that attracts other types of talented or high human capitals individuals.

Florida calls for complementing policies aimed at attracting firms with policies for attracting people, which means addressing issues of ‘people climate’ as well as of ‘business climate’ (Florida 2002c). This suggests that the attention of politicians and planners should be directed towards people and their skills or competences, not companies, i.e. away for business attraction to talent attraction and quality of place (Ibid.).

Aim & Objectives

These were established from the outset as follows:

The overarching aim of the project was to examine important aspects of the locational preferences of knowledge-based industries.

The study objectives were to examine:

- the performance of regions across the UK with reference to the knowledge economy;
- the role that human capital, creative capital, and diversity play in technology-based economic development in UK compared to European locales.
- the relationship between talent, technology, creativity and diversity in city-regions in UK, compared to those in other European countries and North American metropolitan regions.
- to assess the extent quality of place - that is amenities, lifestyle and environmental quality - affect the ability of regions to attract talent and to generate and sustain

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1 It should be noted that Florida’s work has been extensively critiqued, see for example Peck (2005); a review of this literature is however beyond the scope of this brief research report.
knowledge-based industry (high tech manufacturing and knowledge intensive services).

The ESRC-funded UK study was intended to:

a. assess the quality of place, as defined, of UK cities
b. compare the quality of place of cities across UK
c. assess the connection between the location of the creative class and inequalities in technical and economic outcomes
d. benchmark the quality of UK cities against cities in Europe, Canada and the United States

These objectives remained unchanged during the course of the research project.

Methods

The key variables for the quantitative analyses are the Bohemian Index, the Talent Index, the Diversity Index, and the Tech-Pole Index. We also subdivided the Creative Class into the Creative Core (scientists and engineers, architects and designers, academics and teaching professionals),\(^2\) and the Creative Professionals (associated professional and technical occupations of the Creative Core, managers, financial and legal professionals). These mirrored variables employed in previous research by Florida (2002a, 2002b, 2002c) and Gertler et al. (2002) on the geography of talent and the rise of the creative class. In addition indicators for cultural and recreational amenities, which also were used in Florida’s studies, were considered. New indicators were developed to reflect characteristics of European cities and their national political economies. These are social cohesion, and a public provision index measuring the supply of public sector goods such as education, health care, social security, etc. UK data were primarily derived from the 2001 Census of Population and the Annual Business Inquiry, and analysed by means of correlation and regression analyses.\(^3\) To

\(^2\) As we define it, the Creative Core maps very closely to the major occupational group Professional Occupations, albeit with a small number of occupations therein placed in our Creative Professionals category. Mainland European countries use the International Standard Classification of Occupations (ISCO) system; due to the nature of the wider research being undertaken it was with reference to this system that our occupational groupings (bohemian, creative class) were defined. In many cases ISCO maps directly to SOC2000, but in other cases it does not.

\(^3\) In general, the variables used were designed jointly to maximize consistency between the different European countries involved in the wider project, and between Europe and the US and Canada. Variation in availability across the partner nations has inevitably imposed some constraints upon the data used by individual partners, and in some cases involved compromises around ‘lowest common denominator’ levels of detail, geography and timeframes.
supplement this, sustainability and liveability indicators were accessed from the Worldwide Quality of Living survey at [http://www.mercerhr.com/](http://www.mercerhr.com/) and from [http://www.urbanaudit.org/](http://www.urbanaudit.org/). In addition, the quantitative work was supplemented by the collection of qualitative empirical material in the form of interviews with key actors in the case-study cities of Cardiff (selected for its ‘unexpectedly’ high levels of creativity, in combination with devolved capital status and associated governance effects) and London (national capital and world city, yet with large internal variations and related regeneration activities facing dual goals of both addressing local needs and simultaneously maintaining the city’s international profile). The qualitative analyses were aimed at obtaining a subjective evaluation and assessment of the relative importance of the various indices used in the quantitative analyses in order to get a more comprehensive picture of which preferences talented people actually have and why they behave the way they do. Interview schedules were standardised across the European research partners.

### Results

**Mapping the Creative Class in the UK**

As shown in table 1, the Creative Class in the UK accounts for some 37.3% of the workforce, substantially greater than the ‘more than 30%’ figure that Florida (2002b) himself quotes with regard to the US. Problems in obtaining consistent occupational time series data mean that it was difficult to draw many conclusions with regard to how the size of the Creative Class may be changing over time. However, if the major group Professional Occupations is taken as a proxy for the Creative Core, then an increase is observed from below 9% of the workforce in the 1991 Census to over 11% in 2001, suggesting significant growth in these occupations.

The total figure for the Creative Class is split between the Creative Core (9.7% of the workforce), the Creative Professionals (25.5%) and the Bohemians (2.1%). As table 1 shows there is considerable variance around the UK percentages. It is worth noting here that the two NUTS3 areas of Inner London West and Inner London East between them
Table 1: Creative Class as a Percentage of the Labour Force

<table>
<thead>
<tr>
<th>Creative Class</th>
<th>UK</th>
<th>Highest Locality</th>
<th>Lowest Locality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Core</td>
<td>9.7%</td>
<td>13.7%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Creative Professionals</td>
<td>25.5%</td>
<td>44.3%</td>
<td>17.7%</td>
</tr>
<tr>
<td>Bohemians</td>
<td>2.1%</td>
<td>8.8%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

Creative Class in Total: 37.3% Highest Locality: 64.9% Lowest Locality: 24.1%

Source: Census of Population 2001

account for the highest percentages across all four Creative Class categories shown. Other than Inner London West (64.9%), only Inner London East (at just under 52%) possesses a labour force of which the Creative Class comprises more than half. For the Bohemians an even greater concentration is observed; after the two Inner London areas (both above 7%) the highest percentage is found in Brighton and Hove at 4.4% of the labour force.

At the opposite end of the spectrum, the same localities also tend to crop up across the board, albeit with some variation; Stoke on Trent possesses the lowest proportion of total Creative Class and also Creative Core, Gwent Valleys the lowest share of Bohemian occupations, while the lowest share of Creative Professionals is found in Hull. Despite this apparent variation, the same localities are typically found within a few places of each other at both the top and bottom of the rankings. This effectively demonstrates that although there are variations in the overall composition of the Creative Class in any given place, there is little correlation between this variation and the actual size of the Creative Class in that place.

Table 2 provides a slightly different view of Creative Class distribution, in this case showing the ten highest and lowest Unitary / County Authorities (UAs), ranked with respect to their Creative Core LQs. There are in total 208 of these localities in the UK, and this level of geography allows a little more detail to become apparent than is the case with NUTS3. Further to this end, the 33 Unitary Authorities that comprise London have been combined.

4 For Northern Ireland the 5 Education and Library Board areas were used in this analysis.
into the single standard NUTS1 UK region; this provides a view of how London as a whole is positioned, but equally important is the fact that 18 of the top 20 Creative Core UAs in the UK are located in the capital,\(^5\) and so collapsing these into a single figure allows detail elsewhere to emerge.

**Table 2: Creative Core Location by Unitary Authority / County**

<table>
<thead>
<tr>
<th>Top 10 Localities</th>
<th>(LQ)</th>
<th>Bottom 10 Localities</th>
<th>(LQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Wokingham</td>
<td>1.46</td>
<td>1.Barnsley</td>
<td>0.63</td>
</tr>
<tr>
<td>2.Reading</td>
<td>1.42</td>
<td>2.Tameside</td>
<td>0.62</td>
</tr>
<tr>
<td>3.Cardiff</td>
<td>1.39</td>
<td>3.N.E. Lincolnshire</td>
<td>0.61</td>
</tr>
<tr>
<td>4.Oxfordshire</td>
<td>1.34</td>
<td>4.Knowsley</td>
<td>0.60</td>
</tr>
<tr>
<td><strong>5.London(^{*})</strong></td>
<td><strong>1.33</strong></td>
<td>5.Kingston upon Hull</td>
<td>0.58</td>
</tr>
<tr>
<td>6.Newcastle</td>
<td>1.32</td>
<td>6.Sandwell</td>
<td>0.57</td>
</tr>
<tr>
<td>7.Cambridgeshire</td>
<td>1.31</td>
<td>7.Thurrock</td>
<td>0.56</td>
</tr>
<tr>
<td>8.Brighton &amp; Hove</td>
<td>1.31</td>
<td>8.Blackpool</td>
<td>0.52</td>
</tr>
<tr>
<td>9.Windsor &amp; Maidenhead</td>
<td>1.31</td>
<td>9.Blaenau Gwent</td>
<td>0.51</td>
</tr>
<tr>
<td>10.Trafford</td>
<td>1.27</td>
<td>10.Stoke on Trent</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Source: Census of Population 2001  
\(^{*}\) Combined NUTS1 region

As might be expected, localities in the M4 corridor area (Wokingham, Reading, Oxfordshire, Windsor and Maidenhead) feature heavily in the top ten Creative Core LQs. In addition to London, ranked at number seven Cambridgeshire completes the third facet of the ‘Golden Triangle’ of the UK’s creative class and, hence, knowledge economy. What is perhaps more interesting is that in addition to those areas which might be expected to feature, a number of less obvious regional centres of creativity emerge – Cardiff, Manchester (Trafford lying just to the west of the city centre with Manchester itself ranked only 4 places below at 14), and Newcastle. Finally, our rankings confirm the perception of Brighton as a creative centre with its unique bohemian image, creative professional strata with relative proximity to and ‘spillovers’ from London.

\(^5\) This statistic should not obscure the fact that massive variation exists within London, with some very low Creative Core LQs found therein for example Barking and Dagenham, at 0.51 the third lowest in England and Wales.
Turning attention to the bottom ten UAs, a number of these are places suffering the protracted after-effects of the loss of heavy industry, either as distinct localities (Blaenau Gwent, Stoke-on-Trent, Barnsley) or the de-industrialised areas of large cities e.g. Tameside (Manchester), Knowsley (Liverpool) and Sandwell (Birmingham). In addition, old-style seaside holiday resorts also make an appearance (North East Lincolnshire, Blackpool). Although locations in the left had column are generally associated with higher levels of growth and prosperity, the patterns revealed here do not necessarily imply an economic consequence; for example Blackpool although the 9th least Creative (Core) locality in the UK has had some success in recent years reinventing itself from a traditional seaside resort destination into one that seeks to attract a younger party-oriented clientele.

Figure 1 below and overleaf provides a visual representation of the distribution of the Creative Core around the UK, as described above. Very briefly, some points to note: in Scotland, Edinburgh is a creative centre itself, while Glasgow’s creative core are concentrated on the fringes of the city. In Wales, Cardiff stands out while the South Wales valleys are particularly low. Relatively high levels of creativity are also found around the western fringes and peripheral areas. Northern Ireland’s creative core are concentrated around south Belfast; conversely, there are very low levels in the centre and eastern areas of the city. The map of England highlights the south east / M4 corridor and old-industrial trends discussed above- London itself is internally differentiated on an east-west axis.
Figure 1: The Creative Core in the UK

a) Scotland: Creative Core

Legend
6.51 - 9.20 | 9.21 - 12.00 | 12.01 - 14.70 | 14.71 - 17.50 | 17.51 - 20.20

Glasgow
Edinburgh

b) Wales: Creative Core

Legend

Cardiff
The Creative Class and Quality of Place

As outlined earlier, Florida suggests that the Creative Class in the US is highly mobile, with strong preferences for certain aspects of quality of place. Subsequently, in conjunction with Canadian researchers (see for example Gertler et al, 2002) he showed that in North America, cities with high levels of Creative Class tend to be open, tolerant and diverse places, with high levels of recreational and cultural opportunity. While we do not claim that all aspects of a concept as nebulous as quality of place can be captured by statistics; we have collectively constructed indicators, underpinned by Creative Class thinking. In this section we analyse the association between these indicators and the location of the Creative Class in the UK. An analysis is conducted of the bivariate correlations between the individual quality of place indicators and the location of the Creative Class; we then combine these indicators into a single multiple regression model, which allows estimation of the overall explanatory value of these variables on the distribution of the Creative Class.
Table 3: Quality of Place Indicators: Overview

<table>
<thead>
<tr>
<th></th>
<th>UK</th>
<th>Highest Locality</th>
<th>Lowest Locality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness (Diversity)</td>
<td>8.9%</td>
<td>36.2%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Bohemians</td>
<td>2.1%</td>
<td>8.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Cultural Opportunity</td>
<td>2.9%</td>
<td>15.2%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Public Provision</td>
<td>9.0%</td>
<td>17.6%</td>
<td>5.4%</td>
</tr>
<tr>
<td>Unemployment</td>
<td>5.1%</td>
<td>10.5%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>


Table 3 shows summary values of the quality of place indicators for the UK. The distribution of ‘bohemians’ has been discussed above and so will not be commented upon here. Levels of diversity, defined as the percentage of residents that are foreign born, shows quite considerable variation; the three highest values are accounted for by London NUTS3 areas (of which there are five) with Inner London East being the highest. The highest placed non-London locality is Leicester, a city with a long tradition of immigration from southern Asia. This result does raise a question over the meaning and value of this indicator in the UK context, and this is discussed below. Conversely, Valleys (Gwent) is the least diverse locality in the UK by this measure, closely followed by the other Valleys areas (Central) of south Wales.

Cultural opportunity also displays wide variation, however Inner London West is a massive outlier, unsurprisingly given the concentration of high profile museums and galleries therein. Perhaps more surprising is that the next highest placed locality is Blackpool at 4.1%; again this highlights how certain quality of place indicators can be influenced by underlying factors which are not necessarily consistent since the Blackpool figure is almost certainly largely derived from a high concentration of bars and amusements rather than the ‘high’ culture found in central London. One again, the lowest value of the indicator (1.3%) is accounted for by the Gwent Valleys sub-region.
Finally, with regard to the Public Provision Index (PPI) it is quite difficult to discern any pattern from the results, with two of the top three being cities of the East Midlands (Nottingham and Leicester respectively), separated only by Inner London West. Again, different forces are likely to be at work here.

### Table 4: Quality of Place- Bivariate Correlations

<table>
<thead>
<tr>
<th></th>
<th>Correlation with Creative Class</th>
<th>Correlation with Creative Core</th>
<th>Correlation with Creative Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness (Diversity)</td>
<td>0.52**</td>
<td>0.44**</td>
<td>0.50**</td>
</tr>
<tr>
<td>Bohemians</td>
<td>0.72**</td>
<td>0.58**</td>
<td>0.71**</td>
</tr>
<tr>
<td>Cultural Opportunity.</td>
<td>0.52**</td>
<td>0.29**</td>
<td>0.56**</td>
</tr>
<tr>
<td>Public Provision</td>
<td>0.02</td>
<td>0.21*</td>
<td>-0.07</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.31**</td>
<td>-0.21*</td>
<td>-0.33**</td>
</tr>
</tbody>
</table>

* significant at the 95% level
** significant at the 99% level

As shown in table 4, the indicators for both diversity and ‘bohemians’ are positively correlated with the localisation of the Creative Class (bohemians excluded) and both its sub-groups. This means that the Creative Class in the UK tends to live in places that also have high levels of bohemians and diversity. Both relationships are quite strong, particularly so between the Creative Class and the location of the bohemians. The openness index is a taken as a measure of tolerance. A more focused measure on the effect of integration or for highly educated foreign-born workers would have been preferable and might capture the openness of a community better. However such measures are restricted by official data inadequacies, an issue that qualitative work was intended to address. However, from the above we may conclude that the Creative Class and tolerance (measured as diversity, and the presence of bohemians) correlate in the way predicted by theory as represented in the work of Florida and his associates in the North American analysis.

With regard to cultural opportunity, a positive and statistically significant relationship exists between the presence of the Creative Class in a location, and that location’s cultural and
recreational offer. This finding is again compatible with those of the North American research. This relationship is quite strong for the Creative Class as whole and the Creative Professionals, but somewhat weaker for the Creative Core. Suburbanisation may be a contributory explanation for this variation.

The concepts of public provision and social cohesion in themselves are not directly measured in standard official statistics in ways that allow comparison on a European scale. Thus, the relative provision of public goods and services in healthcare and education is measured here by levels of employment in these sectors. Conversely, unemployment i.e. exclusion from the labour market, is one of the main manifestations of social exclusion, accordingly it is utilised here to denote the variable in question.

For public provision, a significant and positive (but weak) association is observed for the Creative Core only. For unemployment, the relationship is consistently negative, although moderate and weak with respect to the Creative Core, meaning that municipalities with high levels of unemployment tend to have a low concentration of the creative class.

Overall, it would appear that the Creative Class in the UK shows a similar pattern of distribution with respect to quality of place, as is observed in North American cities. High concentrations are found in places which are tolerant, diverse, bohemian, socially cohesive and which offer higher levels of cultural opportunity.

In order to test a unified Creative Class model, the multiple regression method was used. The advantage of using this method is that all indicators are tested in one model, and therefore it is possible to control for any multicollinearity between the independent variables. A total of six models were produced; for each of the Creative Class and the two subgroups (the Creative Core and the Creative Professionals) two models were calculated.
Table 5: Results of the Combined Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardised Coefficients</th>
<th>Standardised Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>27.882</td>
<td>1.097</td>
<td>25.406</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Openness</td>
<td>.143</td>
<td>.060</td>
<td>.218</td>
<td>2.360</td>
</tr>
<tr>
<td></td>
<td>Bohemians</td>
<td>3.235</td>
<td>.906</td>
<td>.414</td>
<td>3.572</td>
</tr>
<tr>
<td></td>
<td>Public Provision</td>
<td>- .423</td>
<td>.126</td>
<td>-.223</td>
<td>-3.356</td>
</tr>
<tr>
<td></td>
<td>Cultural Opportunity</td>
<td>.877</td>
<td>.265</td>
<td>.302</td>
<td>3.313</td>
</tr>
<tr>
<td></td>
<td>Unemployment</td>
<td>-.903</td>
<td>.145</td>
<td>-.385</td>
<td>-6.231</td>
</tr>
</tbody>
</table>

Dependent Variable: Creative Professionals

Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.844(a)</td>
<td>.713</td>
<td>.698</td>
<td>2.19272</td>
</tr>
</tbody>
</table>

for each dependent variable, including either all foreign born citizens or non-western foreign born citizens as the ‘openness’ variable. Of these, the model shown in table 5 - Creative Professionals as the dependent variable and using the all foreign born citizens definition of openness- had the greatest explanatory power. In total, this model explains around 70% of the distribution of the Creative Professionals. All of the independent variables are significant at the 99% level, with the exception of openness (95%).

The location of the bohemians, openness and the cultural opportunity index are positively correlated with the localisation of the Creative Professionals. This means that, as predicted in Creative Class theory, wherever these quality of place indicators are high, levels of Creative Professionals will also tend to be higher. Moreover from the standardised coefficients shown in table 5 we can infer that of these variables it is the presence of the bohemians that has the greatest influence. With regard to the other two independent variables, unemployment is negatively associated with the location of Creative Professionals; the nature of causality behind this relationship is open to debate; on the one hand it may represent an association...
with higher levels of social cohesion, while on the other it could be seen as purely labour market related in that creativity is a growing area of employment and as such would be expected to coincide with lower unemployment. Finally, the public provision index is negatively linked to the distribution of Creative Professionals, which is the opposite of what might be expected. This could be due to the nature of public sector employment in the UK, which tends to be proportionally higher in less prosperous areas, reflecting a lack of private sector jobs.

*The Creative Class and Indicators of Prosperity, Growth and Technology*

Having examined where the Creative Class is located in the UK, and how this distribution is associated with various indicators of quality of place, attention is now turned to the relationship between the Creative Class and basic indicators of prosperity. Table 6

<table>
<thead>
<tr>
<th></th>
<th>Correlation with Creative Class</th>
<th>Correlation with Creative Core</th>
<th>Correlation with Creative Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population change</td>
<td>0.51**</td>
<td>0.29**</td>
<td>0.56**</td>
</tr>
<tr>
<td>Employment change</td>
<td>0.27**</td>
<td>0.23**</td>
<td>0.25**</td>
</tr>
<tr>
<td>Milken Techpole Index7</td>
<td>0.64**</td>
<td>0.49**</td>
<td>0.63**</td>
</tr>
<tr>
<td>Employment change (Hi tech)</td>
<td>0.04</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>New Firm Formation</td>
<td>0.76**</td>
<td>0.46**</td>
<td>0.82**</td>
</tr>
</tbody>
</table>

Source: ONS, various datasets7
* significant at the 95% level
** significant at the 99% level

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6 Following the method of the Milken Institute (http://www.milkeninstitute.org/), this index shows local employment in technology-intensive manufacturing and service sectors (specialization and size).
7 The need to obtain consistent datasets both internally and with respect to European partners means time periods used are somewhat complex; they are as follows; Tech pole index 2002, New firm formation 2002, Population change 1996-2002, Employment change 1998-2003.
shows overall bivariate correlations between the three Creative Class groupings and the five indicators of prosperity, growth and technology. The association between the two general indicators of prosperity (i.e. population growth and employment growth) and the localisation of the Creative Class is statistically significant and positive. The relationship between Creative Class location and population growth is quite strong for both the Creative Class as a whole and the Creative Professionals, but weak for the Creative Core. For employment growth, the relationship is weak for both the Creative Class and the its two subgroups. Therefore a high concentration of the Creative Class tends to be found in places that have growing populations and rising employment. This can be interpreted as evidence in support of the ‘jobs follow people’ aspect of the Florida thesis, i.e. that the Creative Class creates prosperity in general by its very presence. Bivariate correlations can however only indicate association (i.e. covariance) and do not themselves imply any causal relationships between the variables involved.

With regard to employment in the Techpole sectors, the relationship between the Creative Class and share of ‘high tech’ employees is positive and significant; this relationship is somewhat stronger for the Creative Class in general and the Creative Professionals in particular than it is for the Creative Core. This means that a high concentration of resident Creative Class tends to be associated with the presence of relatively high levels of employment in technology-based businesses. This preponderance for the Creative Class to be co-located with high-technology activities is consistent with what is observed in the North American research (Florida 2002a, 2002b, 2002c; Gertler et al 2002). There is however no evidence to suggest that the presence of the Creative Class is associated with any growth in employment in these activities, these correlations not being significantly different from zero.

Finally, the correlation between the presence of the Creative Class (in all its forms) and the rate at which new firms are created is positive and significant. The relationship is strong with respect to the Creative Class as a whole, and for the Creative Professionals but less so for the Creative Core. This means that localities in which the Creative Class in the UK is concentrated typically exhibit higher levels of new firm formation; this is consistent with the Florida thesis but again open to interpretation with regard to causality.
Qualitative Findings – a brief outline

A framework shown was developed in discussion with the various research partners as an attempt to conceptualise the competing influences of quality of place (whether in terms of actual experience, or image) and its impact on the locational choices of the Creative Class. This involved interviews with economic development bodies, city planners, representatives of civic society, community leaders, arts and creativity policy-makers, business leaders, and members of the creative class themselves in two case-study cities—Cardiff and London. We sought to explore:

- ‘pull’ factors that actually make people move into a city-region
- ‘preventing’ factors that explain why people do not want to move into a city-region
- ‘push’ factors that make people leave
- ‘retaining’ factors that make people stay, despite other opportunities arising

In general, quality of place factors (as we define them in this project) were important influences upon where the Creative Class chose to live and work, but were typically secondary to what might be defined as ‘Life Change’ events such as entering higher education, starting the first ‘career’ job, preferences of spouse and family. Also, unanticipated life events, such as redundancy, family break-up and divorce etc, played an important role. As such we can think of the quality of place issues as being ‘steering factors’ in location choice, while the life events mentioned above are the actual ‘triggering factors’ for choices to be made.
Comparative Results

Figure 2: Europe and North America- Benchmarking the Bohemians

As a selected example of the quality of place indicators employed in the research, Figure 2 shows cities in Europe and North America with the highest concentration of bohemians. Amsterdam and London are significant outliers, with over 20 bohemians per 1000 population- nearly double the third-placed city (Helsinki). Vancouver and Toronto feature prominently; in addition to London four other UK cities including Manchester appear further down the list, as does both the west coast (Los Angeles and San Francisco) and east coast (New York, Boston) of the USA.
Figure 3: Comparing ‘Openness’ Across European and North American Cities

Figure 3 shows the proportion of non-western foreign born citizens; in this case it is Vancouver that is the outlier with approaching 30% of the population falling into this category. Most the cities seen in Figure 2 appear in this listing too, indicating a consistent general association between creativity and diversity (as we measure it).

Turning to an example of comparative bivariate analysis, Figure 4 shows the association between the Tech Pole index (relative employment in technology-intensive manufacturing and service sectors), and the relative concentration of Bohemians across the European research partners and for North America. This association is stronger within North America. The reason for this is the more intensive high technology activity in more cities in the US and Canadian context, where also the greater distances between cities mean more may have representation of both technology entrepreneurs and bohemians in the same places. In Europe, by contrast, bohemians concentrate in the capital city, technology entrepreneurship is less common and may also frequently be found in smaller university cities (e.g. Oxford, Cambridge, Lund, Uppsala, Oulu, Turku, Aalborg, Twente, Nijmegen)
With regard to multivariate analysis, Table 7 shows the results of the regression models generated as described above across the European research partners (the pre-existing North American is not usable in this context here, due to lack of consistency with the data collected in parallel in Europe). The results are quite varied but some points consistently emerge: thus the Bohemian Index, Openness and the Public Provision Index are the most consistently significant factors; these variables are significant with the signs hypothesised in the model, with the exception of the Public Provision Index. The Bohemian variable is significant in 4 of the 6 countries included in the model, the exceptions being Norway and Denmark. The pattern for Openness is slightly more complicated; positive and significant results are obtained for the UK, Germany and Norway, while the Netherlands this variable is negative at the 99% level of significance. This means that while the creative class is more evenly distributed in, for example Norway and Denmark, than in the UK or Finland, bohemians are
more concentrated in the capital city. Moreover, given that in Finland and Sweden, in particular, rural populations are often low, places with intense provision (towns and cities) are where a moderately evenly spread creative class locate. For Germany, welfare provision is even and rural areas are predominantly well-provided, so the interpretation is a slightly different one. Clearly the UK and Netherlands space economies are different. London possesses the most varied and best-quality public provision, but private provision is also a significant attraction. It also has massively the greatest share of the UK’s creative class. Whereas, the Netherlands has even public provision, overwhelmingly in urban areas but the creative class is more unevenly spread.

<table>
<thead>
<tr>
<th>Table 7: Results of Regression Models: Regression Coefficients</th>
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<tbody>
<tr>
<td><strong>Dependent variable is European Creative Class LQ (excluding Bohemians). Sweden excluded due to lack of regional unemployment data.</strong></td>
</tr>
<tr>
<td><strong>Bohemian</strong></td>
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<tr>
<td><strong>Openness (NonWestern)</strong></td>
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<td><strong>Public Prov Index</strong></td>
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<tr>
<td><strong>Cultural Opp Indx</strong></td>
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<tr>
<td><strong>Unemployment</strong></td>
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<tr>
<td><strong>Adjusted R²</strong></td>
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</tbody>
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() = not significant

The results for the Cultural Opportunity Index (the proportion of employees in the cultural and recreational industries) are interesting and merit further investigation in new research; this variable is only significant in 1 of the 6 country-specific models - Germany. This may be a reflection of the varying geographies of culture itself, or it may be influenced by measurement issues- for example casual empiricism suggests that different types of bar or restaurant will play very different ‘cultural’ roles (it may be recalled for example that
Blackpool scored relatively in the index); the employment data does not itself allow these distinctions to be made. Unemployment is significant in 2 of the 6 country models (UK and Germany), and in different directions; this perhaps reflects the ambiguity over what this variable is actually measuring- on one hand it could possibly serve as an (inverse) indicator of social cohesions, which the creative class are supposedly attracted to (or at least deterred by its absence), while on the other it acts as a labour market variable which one might expect to be negatively correlated with higher levels of Creative Class employment in a buoyant local or regional economy.

The Public Provision Index results are also interesting in that they are positive and significant, with the exception of the UK and Netherlands. In a hypothetical situation where public provision is spread evenly and is of similar quality this would make it irrelevant for any locational choices (regardless of preferences); this is unlikely to be the explanation for the observed pattern of results- the non-significant result for the UK may be linked to a greater emphasis on private provision, or some other underlying reason for a difference a Creative Class preferences in this area.

With regard to the R² values of the various regression models, there is some support for the idea that the Creative Class model tends to work more effectively in a Liberal Market rather than a Co-ordinated Market (Hall & Soskice, 2001; i.e. essentially the UK in this research), but this is not exactly conclusive, with the value for Finland being the highest and the German model very similar to the UK.

Activities

Findings from the project have been widely disseminated to relevant organisations and individuals as, detailed in Section 2B. In addition, an extensive exchange of knowledge took place at the regular ‘TTT-group’ project meetings, held in Copenhagen (March 2005; June 2005), Utrecht (October 2005), Chicago (March 2006- AAG meeting, project session), Cardiff (September 2006), and San Francisco (April 2007- AAG meeting, overall project results session).
Qualitative and Qualitative Datasets arising from the research have been offered to the Data Archive as per Declaration 3A.

In addition, various findings from the research have been presented at the following events:

1. 6th European Biennial of Towns and Town Planners, Copenhagen, June 9-11 2005
2. Cardiff University Dept of City and Regional Planning, 40th Anniversary Lecture Series, December, 2005.

Outputs

The following publications have been produced from the project:


In keeping with the initial plans, a number of further publications are in progress as detailed in Section 2A.

Impacts

The academic impact of this research is demonstrated in the record of interest shown in presentation of keynotes and publications. Policy organisations at the supranational, national
and sub-national levels have shown interest in the accounts of creativity, quality of place, and economic development. As noted, presentations of project findings were made to academic and policy audiences. The results of the research were included in numerous further presentations to policy and academic audiences at home and abroad.

Examples include: International Conference on Regional innovation & Creativity, Porto, Portugal 22-23 February, 2007; International Urban Region and Knowledge conference, organised by the Knowledge Milieux and Spatial Structures Department of The Institute for Regional Development, and Georg-Simmel-Centre, Berlin, March 15-16, 2007; and the Sustainable Urbanism Conference at Texas A&M University, College Station 1-4 April, 2007.

**Future Research Priorities**

Future research priorities currently being pursued which arise from the results of this research include the following:

1) The knowledge economy and creativity in Rural Economies (EU FP7 Application, 2007)
2) The Role of ‘Green Governance’ in Securing Quality of Place (ESRC proposal in preparation, 2007)
3) Dimensions of Difference in European Food Cultures (Invitation to this Centre for Advanced Studies to partner Danish-led EU FP 7 proposal, 2007)
4) In Current FP 6 EURODITE project this Centre’s primary research focus is upon ‘Cultures of Consumption’, particularly the role of perceived ‘healthy consumption of biotechnological ‘functional foods’ and ‘organic food’ in preference to the products of intensive farming and mass retail of ‘conventional foods’
5) In the current FP 6 CURE project this Centre’s role is to theorise and evolve a conceptual framework and research design for investigating the intersection of corporate and regional cultures in economic and environmental policy-formation.

Each of these proposals or actual projects has been influenced by findings arising from the current ESRC TTT project. Much of the actually existing project-work involves comparative European studies.
Appendix 1: Bibliography


