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Bohemia and economic geography

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Abstract

This paper examines the geography of bohemia and the relationships between it, human capital, and high-technology industries. 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 capital individuals. The presence of such human capital in turn attracts and generates innovative, technology-based industries. To explore these factors, this paper introduces a new measure—the *bohemian index*—that directly measures the bohemian population at the MSA level. Statistical research examines the relationships between geographic concentrations of bohemians, human capital, and high-technology industry concentration. The findings support this hypothesis. The geography of bohemia is highly concentrated. The results indicate positive and significant relationships between the bohemian index and concentrations of high human capital individuals and between the bohemian index and concentrations of high-technology industry. The relationship between the bohemian index and high-technology concentrations is particularly strong.

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1. Introduction

In Spring 2000, an article in *The Economist* titled 'The Geography of Cool' highlighted the connection between bohemian enclaves in places like New York City, London, and Berlin, the ability to attract people, harness their creative energy and generate economic growth. Economists and geographers have noted the role of cities as centers of innovation, while sociologists and cultural theorists have explored bohemian lifestyles and culture. There has been little serious research on the connection between cultural assets, human capital, and innovative industries. It is precisely that connection which is the subject of this paper.

Scholars have long noted the role played by bohemia in modern societies. Park (1915), and later Gordon (1947), Cohen (1955), and Becker (1963) identified importance of bohemia and what can be referred to as 'subcultural capital' to both society in general and cities in particular. Grana (1964) noted the historical distinction between bohemia and bourgeois. Brooks (2000) suggested that the traditional distinction between bourgeois and bohemia has given way to a new blending he calls *bohemian-bourgeois* or '*Bobos*' for short.

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Jacobs (1961) long ago identified the connection between creativity, bohemian diversity, and vibrant city life. More recently, geographers and other social scientists have focused on the role of culture and subculture in consumption patterns (Zukin, 1991; Bocock, 1992). Geographers have done a great deal of work on the role of gentrification in artistic communities in shaping city development (Smith, 1996; Miles, 1997). Still others have probed the role of lifestyle and cultural amenities in city life (Clark and Lloyd, 2000), the attraction of human capital, and economic growth (Glaeser et al., 2000). A recent study (New England Council, 2000) examined the 'creative economy' in New England, and found evidence of a relationship between creative activity associated with bohemians and creative economic activities more generally.

Despite these important contributions, the literature has neglected the geography of bohemia and its relationship to other regional characteristics and outcomes. Some of this neglect can be attributed to a lack of reliable measures of bohemia, as well as a conceptual framework which links bohemia to other factors associated with innovation and economic growth.

This paper seeks to shed light on these issues. It is primarily concerned with the relationships between bohemia, human capital, and high-technology industry. The underlying hypothesis is that the presence and concentration of bohemians in an area signals an environment or milieux that attracts other types of talented or high human capital individuals. The presence of such human capital concentrations in a region in turn attracts and generates innovative technology-based industries.

To get at this, the paper introduces a new measure—the *bohemian index*—that directly measures the bohemian population at the MSA level. Statistical research employing this measure is used to probe the relationships between geographic concentrations of bohemians, human capital, and high-technology industry concentration.

The findings support this hypothesis. We find that the geography of bohemia is highly concentrated. We also find evidence of significant and positive relationships between the bohemian index and concentrations of high human capital individuals and between the bohemian index and concentrations of high-technology industry. The relationship between the bohemian index and high-technology concentrations is found to be particularly strong. I do not however interpret these findings to suggest a directly causal or mechanistic relationship between bohemian concentrations and concentrations of high-technology industry. Rather, the presence of a significant bohemian concentration signals a regional environment or milieu that reflects an underlying openness to innovation and creativity. This milieu is both open to and attractive to other talented and creative individuals, including those who are likely to establish high-technology firms and work in high-technology industries.

2. Concepts and theories

The literature on bohemia is vast. For our purposes, two strands of this literature are particularly useful. The first considers the economic, social, and cultural distinctions between bohemians and mainstream or bourgeois society. Once a hard and fast distinction, recent writing points to a possible blending of these two categories. The second considers cities as centers of creative human activity and points toward a connection between cultural amenities, creativity, and economic growth.

2.1 Bohemian and bourgeois

> Hip is how business understands itself. (Tom Frank, 1997)
> It's hard to tell an espresso-sipping professor from a cappuccino-gulping banker. (David Brooks, 2000)

Decades ago, Grana (1964) noted the distinction between bohemian and bourgeoisie. Following Grana, Young (1971) noted that bohemians exist in a world outside the traditional 'Protestant ethic' of capitalism, favor more libertine lifestyles, and favor enjoyment and self-actualization over work. Bell (1976) placed the tradeoff of enjoyment and work as the center of his thesis on the 'cultural contradictions of capitalism'. In his words, 'not work but lifestyle became the source of satisfaction and criterion for desirable behavior in the society. What has happened in society in the last fifty years—as a result of the erosion of the religious ethic and the increase in discretionary income—*is that culture has taken the initiative in promoting change*, and the economy has been geared to meeting those wants' (italics in original) (Bell, 1976).

More recent writing draws from these ideal types to suggest their possible synthesis. Seabrook (2000) points to the rise of so-called *no-brow* culture, which overcomes the old distinction between high and low culture. Brooks (2000) suggests the rise of a new category that he dubs the 'bohemian-bourgeois' or *Bobos* as a new social grouping. While Brooks recognizes the rise of this new kind of lifestyle, he neglects the underlying economic shifts that made this possible. Simply put, he fails to see this new grouping in connection to underlying economic trends, particularly the rise of the knowledge economy. The increasing importance of creativity, innovation, and knowledge to the economy opens up the social space where more eccentric, alternative, or bohemian types of people can be integrated into core economic and social institutions. Capitalism, or more accurately new forms of capitalist enterprise (i.e. the R&D lab and the startup company), are in effect extending their reach in ways that integrate formerly marginalized individuals and social groups into the value creation process.

Others are critical of this process. The cultural theorist, Tom Frank (1997) suggests that this synthesis is linked to the evolution of capitalism, and refers to the *conquest of cool*—the blending of business culture and counterculture into a new culture of 'hip consumerism'. 'Consumer capitalism did not demand conformity or homogeneity;' writes Frank, 'rather, it thrived on the doctrine of liberation and continual transgression that is still familiar today'. Far from being an oppositional movement, capitalism has absorbed and integrated what used to be thought of as alternative or cool.

Taken as a whole, this literature is suggestive of a growing connection between bohemia and mainstream society, and of a growing integration of bohemian symbols and culture into mainstream economic activity. This lends support to our thesis of the relationship between concentrations of bohemians and the clustering of other creative forms of economic activity.

2.2. Bohemia and geography

> What are the external facts in regard to the life in Bohemia, the half-world, the red-light district and other 'moral regions' less pronounced in character? (Park, 1915)

Urban sociologists have examined the role of bohemia in the social structure of cities and called attention to the role of cultural and subcultural capital in modern society.

Park (1915) long ago noted the role of subcultures such as bohemia in the social and spatial structure of cities. For Park, vibrant cities developed outlets for eccentric lifestyles and alternative cultures—places where subcultural groups find identity and come to be embedded in broad schema of city life. Later, Gordon (1947), Cohen (1955), and Becker (1963) built upon Park's theories suggesting that bohemian subcultures play an important role in both societies in general and cities in particular. This line of theory and research identifies subculture as an important dimension of society.

Urbanists have noted the importance of diversity and creativity as a key factor in city growth and development. In her classic work on cities, Jacobs (1961) called attention to the role of creativity and diversity as 'engines' for city growth. She noted the significance of eclecticism and inventiveness as important components of city life. She also highlighted the role of older, underutilized buildings of the sort associated with bohemian enclaves as important spaces of innovation, writing that, 'New Ideas must use old buildings'.

Economic geographers and regional scientists have examined the role of cultural amenities in firm location and regional growth. There is now a considerable literature on the role of cities as entertainment and lifestyle centers. Hannigan (1997) has noted the rise of the 'Fantasy City', which uses entertainment and lifestyle to attract people. Clark and Lloyd (2000) argue that amenities are a key component of modern cities, referring to this lifestyle-oriented city as an 'Entertainment Machine'. Glaeser et al. (2000) found a significant relationship between amenities and city growth in their research on the 'Consumer City'. Kotkin (2000) identified the relationships between lifestyle amenities and the locational preferences of some high-technology industries for neighborhoods such New York's Silicon Alley, San Francisco's SOMA and Mission Districts, and Seattle's Pioneer Square. A recent report (Sommers and Carlson, 2000) found that some 50% of high-technology firms and employment in Seattle is located in a high-amenity district surrounding the urban core. There is growing concern that high-technology firms and industries are displacing bohemian enclaves in cities like New York and San Francisco.

This body of work suggests a connection between bohemian centers and creative activity in general and calls attention to the tendency for innovative economic activity to cluster in and around bohemian enclaves.

3. Research design

Building from these insights, the research conducted an empirical analysis of the geography of bohemia and the relationship of concentrations of bohemians to concentrations of human capital and to clusters of high-technology industries.

Qualitative research including interviews and focus groups was initially conducted to better understand the structure and mechanics of these relationships and to generate testable hypotheses. Unstructured open-ended interviews were conducted with more than 100 people who were making or had recently made location decisions. Structured focus groups were conducted with the assistance of a professional focus group organization to further assess the factors involved in personal location decisions. (The results of the focus groups are summarized in Florida 1999 and a copy of the original focus group report can be made available to interested readers.) The interview and focus group research indicated that cultural and lifestyle factors are an important component of these location decisions, suggesting in particular the importance of

Table 1. Descriptive statistics

	Obs	Mean	Std. Dev.	Min	Max
Boho index	50	1.15	0.28	0.70	1.93
Techpole	50	1.40	1.88	0.06	8.24
Talent index	50	0.24	0.05	0.14	0.42
Coolness	43	6.35	1.51	1.00	10.00
Culture	50	1,804.76	1,458.98	482.00	9,375.56
Gay index	50	1.32	0.87	0.19	5.39
Melting pot	50	0.08	0.07	0.01	0.39
Population (000,000)	50	2,356	2,888	716	16,000

bohemian communities to those decisions. The qualitative research was exploratory in nature and designed to shed light and help structure the quantitative research that was confirmatory in nature and approach.

Statistical analysis examined both the geography and the relationship of that observed geography to other characteristics of regional economies. It included descriptive statistics, correlation or bivariate analysis, and multivariate regression analysis. Significantly, it employs a new measure of the bohemian population, the *bohemian index*.

3.1. Bohemian index

The *bohemian index* is based on occupational data from the *1990 Decennial Census Public Use Microdata Samples* (5% sample). It includes the following occupations: authors (183); designers (182), musicians and composers (186); actors and directors (187); craft-artists, painters, sculptors, and artist printmakers (188); photographers (189); dancers (193); and artists, performers, and related workers (194). The index is basically a location quotient that measures the percentage of bohemians in a region compared to the national population of bohemians divided by the percent of population in a region compared to the total national population.

This *bohemian index* is an improvement over previous measures of cultural and lifestyle amenities in that it represents a direct measure of the producers of cultural and creative assets. It also avoids the pitfalls of other measures which tend to be indirect measures of cultural assets (i.e. measure of cultural programming, art museums and galleries, or restaurants) and which draw distinctions between so-called high- and low-culture. Table 1 provides descriptive statistics for the bohemian index and other key measures used in this analysis.

To examine the robustness of the bohemian index, we compared it to other measures of amenities. The first group includes traditional measures of indicators of artistic and cultural amenities, adapted from the *Places Rated Almanac* (Boyer and Savageau, 1989). The culture measure is a composite based on the following factors: radio

Table 2. Correlation matrix

	Boho	TechPole	Talent	Coolness	Culture	Gay	Melting pot	Pop.
Boho index	1							
TechPole	0.65	1						
Talent	0.55	0.72	1					
Coolness	0.51	0.42	0.47	1				
Culture	0.54	0.49	0.42	0.57	1			
Gay Index	0.60	0.77	0.72	0.38**	0.29**	1		
Melting Pot	0.50	0.43	0.21*	0.32**	0.42	0.49	1	
Population	0.60	0.49	0.23*	0.41	0.85	0.29**	0.60	1

Note: *Insignificant at the 0.1 significance level. **Significant at the 0.05 significance level. Others are significant at the 0.01 significance level.

broadcast time devoted to classical music, public television stations, public library book acquisitions, non-profit art museums and galleries; performances of fine arts and musical groups, access to the culture of adjacent urban areas. The correlation between the bohemian index and this measure is 0.541 and is significant at the 0.01 level (see Table 2). A less traditional amenity measure is the so-called 'coolness factor' developed by a *POV Magazine* (December–January 1999). The measure is based on the percentage of population ages 22–29, diversity of this cohort, nightlife (i.e. number of bars, night clubs and the like per capita) and culture (i.e. number of art galleries and museums per capita). The correlation between it and the bohemian index is 0.512 and is also significant at the 0.01 level.

3.2. Human capital

The *talent index* is a measure of highly educated people defined as those with a bachelor's degree and above. It is normalized on a percentage basis or per thousand people and based on the *1990 Decennial Census Public Use Microdata Samples*.

3.3. Diversity/openness

To examine the relationship between bohemians and other dimensions of openness and diversity, the research employs several alternative measures of diversity. The first is a *melting pot index* based on the percentage of population that is foreign born. It is normalized per thousand people and based on the *1990 Decennial Census Public Use Microdata Samples*.

The second is the *gay index*. As its name implies, this is an index of the population that is gay developed by Black et al. (2000). The gay index is based on data from the *1990 Decennial Census Public Use Microdata Samples* (5% sample), identifying households in which a householder and an unmarried partner were both of the same sex

(in this case male). Approximately 0.01 percent of the population was composed of gay coupled men. The index is basically a location quotient that measures the number of gay households compared to the national population of gay households divided by the population in the city compared to the total national population.

3.4. High-technology industry

An important component of the analysis examines the effect of bohemians (controlling for other factors) on the location of high-technology industry. The measure of high-tech industry concentration is based on Milken Institute's *tech-pole index*. The tech-pole index is a composite measure based on the percent of national high-tech real output multiplied by the high-tech real output location quotient for each MSA (see De Vol, 1999).

3.5. Statistical/econometric analysis

Both bivariate and multivariate analyses were conducted to examine the effect of bohemians (controlling for other factors) on human capital, and high-technology industry location.

The analysis is based on the 50 largest metropolitan regions (MSAs) those with populations of 700,000 and above. For most regions, the metropolitan statistical area or MSA is employed as the unit of analysis. MSAs that are part of a CMSA (or consolidated metropolitan statistical area) are combined into their CMSA as a single unit of analysis. MSA-level variables are weighted by their proportion of the CMSA and then summed at the CMSA level. The consolidated metropolitan statistical area or CMSA is used as the unit of analysis for the five largest regions: San Francisco, Los Angeles, Miami–Fort Lauderdale, New York, and Dallas–Fort Worth.

4. Findings

The findings of the research are organized in three sections. The first section presents an overview of the geography of bohemia. The second section examines the relationship between bohemian clusters and concentrations of human capital. The third section explores the relationship between bohemian clusters and concentrations of high-technology industry.

4.1. The geography of bohemia

Let's begin with a basic picture of the economic geography of bohemia. To do so, Figure 1 provides a map of the geographic distribution of bohemians in the United States. As these data show, the geography of bohemia is highly concentrated and uneven. (Appendix A provides a listing of all 50 MSAs ranked by the total number of bohemians and bohemians per capita as well as the bohemian index.)

Not surprisingly, New York City and Los Angeles top the list in terms of total number of bohemians. Both have bohemian populations in excess of 100,000. San Francisco is next with a population of more than 40,000 bohemians (roughly a third the size of the two largest regions). Chicago and Washington, DC have bohemian populations in excess of 30,000, and another 12 or so regions have bohemian

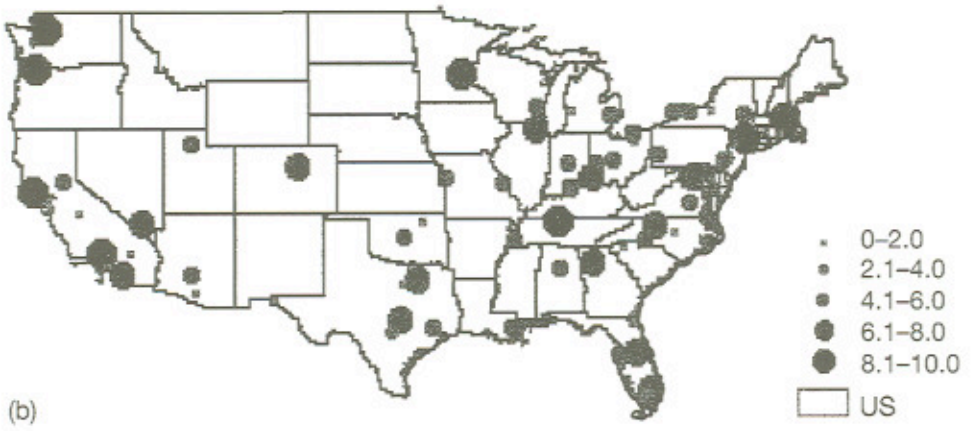

Figure 1. Geography of bohemia by region (a) Number of bohemians; (b) bohemians/1000 population; (c) bohemian index.

populations which exceed 10,000 people. Some 28 regions have bohemian populations of less than 5000. The differences between the highest and lowest ranked regions are quite considerable. The highest ranked regions have bohemian populations that are some 25 times larger than those of the lowest ranked regions. Obviously this simple count measure is likely to be effected by the population size of the MSA. In fact, the correlation between the bohemian index and population size is 0.60 (see Table 2).

A simple way to control for this is to normalize by population size. When this is done, Seattle, New York and Los Angeles top the list with more than nine bohemians per thousand people. Six additional regions have more than eight bohemians per thousand: Nashville, Portland, Oregon, Washington, DC, Minneapolis-St. Paul, San Francisco, Boston, and Austin. However, nearly half of the sample MSAs have between four and six bohemians per thousand people. The lowest ranked regions include: San Antonio, Oklahoma City, Buffalo, Cleveland, Pittsburgh, Albany, and Baltimore.

The *bohemian index* is a location quotient measured as the ratio of the percentage of bohemians in a region compared to the population in that region. An index value of 1.0 means these shares are in exact proportion. An index value of greater than 1 means a greater than average concentration, while a value of less than 1 means a less than average concentration. The average for the top 50 MSAs on the bohemian index is 1.15.

The two leading regions on the bohemian index are New York and Los Angeles with bohemian index values in excess of 1.85. Five regions have bohemian index values in excess of 1.5: Washington, DC, San Francisco, Seattle, Boston, and Nashville. Another three regions—Austin, Portland Oregon, and Minneapolis—have bohemian index values in excess of 1.4. Eight additional regions have bohemian index values above the MSA average of 1.15. However, 31 MSAs have bohemian index values less than the MSA average, and 17 of these have bohemian index values of less than 1. The six lowest ranked regions—Cleveland, Albany, Pittsburgh, San Antonio, Oklahoma City and Buffalo—have bohemian index values in the 0.7–0.8 range, less than half that of the leading regions.

4.2. Talent/human capital

With this basic descriptive exercise behind us, I would like to turn attention to the relationship between bohemia and human capital. Recall the main hypothesis is the presence of a large concentration of bohemians signals a regional milieu that is attractive to and supportive of other types of human capital. To get at this, I look first at the direct relationship between bohemia and human capital and then turn to other measures of openness and diversity.

The findings suggest a rather strong relationship between bohemia and human capital. Seven of the top ten bohemian index regions also number among the top ten MSAs in terms of human capital: Washington, DC, San Francisco, New York City, Seattle, Boston, Austin, and Minneapolis. On the opposite side of the spectrum, seven of the lowest ranked bohemian index regions also rank among the lowest on the talent index: Louisville, Tampa, Dayton, Cleveland, Pittsburgh, San Antonio, and Buffalo.

The correlation between the bohemian index and the talent index is 0.553 and is positive at the 0.01 level. Figure 2 is a scatterplot that shows the relationship between the bohemian index and the talent index for sample MSAs. Washington, DC, Boston, San Francisco, Seattle, Austin, Atlanta, and New York occupy the upper right hand quadrant of this graph.

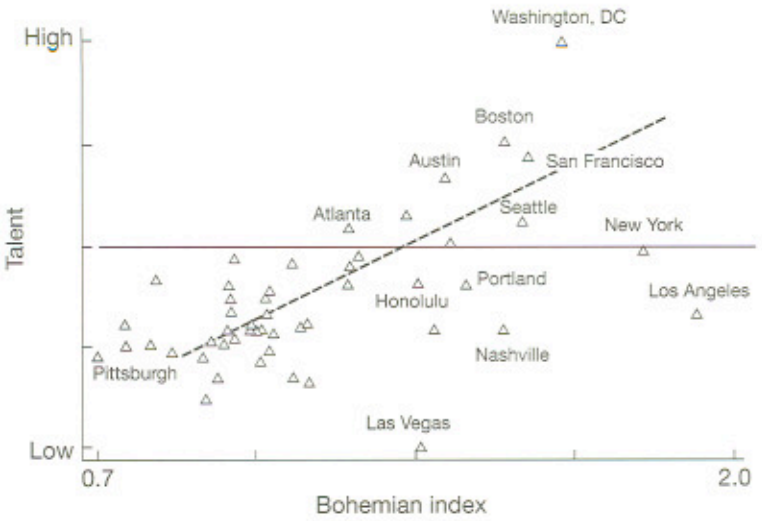

Figure 2. Bohemian index and talent by region.

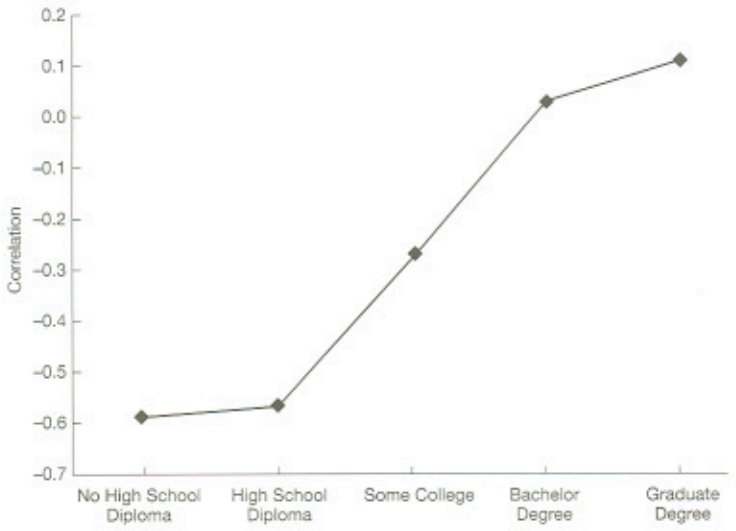

Figure 3. Bohemian index against level of education.

Figure 3 is a graph that plots the correlation coefficients between human capital and the bohemian index. As this figure shows, there is striking relationship between the bohemian index and human capital (measured as various levels of education attainment). The correlation coefficients between these two measures rise sharply alongside level of education. Furthermore, the correlation coefficients are highly positive for highly educated individuals (measured as the percentage of the population with bachelors or graduate degrees) and negative for other segments of population (measured as the percentage of population with a high school degree or less).

The presence of a large concentration of bohemians may indicate an underlying openness to diversity. In fact, a main hypothesis of this research is that the presence of a

Table 3. Regression results: bohemian index and talent

	Model 1		Model 2	
Variables	Coefficient	*P*-value	Coefficient	*P*-value
Boho Index	0.058	0.012**	0.057	0.007***
Gay Index	0.031	0.000***	0.031	0.000***
Population	0.000	0.000***	0.000	0.000***
Cultural amenities	0.000	0.000***	0.000	0.000***
Recreation	0.000	0.003***	0.000	0.002***
Climate	0.000	0.795	0.000	0.682
Coolness Index	0.001	0.805		
R-square	0.789		0.764	
Adjusted R-square	0.747		0.731	
# of Obs.	43		50	

Note: *Significant at 0.1 level. **Significant at 0.05 level. ***Significant at 0.01 level

significant bohemian population is a signal of such openness. In related research, I suggest that a key factor in regional development is *low entry barriers* that this sort of openness to diversity indicates (Florida and Gates, 2001).

To get at this, I examined the relationship between bohemian index and two measures of diversity: the gay index and the melting pot index. The results suggest a close association among these factors. Six of the top ten bohemian index cities also number among the top ten gay index cities: San Francisco, Washington, DC, Austin, Seattle, Los Angeles, and Boston. Five of the top ten bohemian index regions also number among the top ten melting pot index regions: Los Angeles, New York, San Francisco, Boston, and Washington, DC. The correlation between the bohemian index and the gay index is 0.60. The correlation between the bohemian index and the melting pot index is 0.505. Both are significant at the 0.01 level.

To get a better handle on the relationship between bohemians and human capital, multivariate regressions were conducted with human capital as a dependent variable and the bohemian index as one of a series of independent variables. The regressions examined the relationships between human capital and the bohemian index, controlling for other amenity measures (i.e. culture, recreation, climate), openness factors (i.e. gay index, melting pot index), population size and median house value. The results of these regression models are presented in Table 3. Generally speaking, the findings here suggest a close relationship between the bohemian index and human capital. The results of the various models generated adjusted R-squared values that are above 0.7, suggesting that these models have high predictive power in explaining the geographic factors associated with concentrations of human capital, particularly the role of bohemian concentrations.

The main findings of this section are clear. There is a close association between bohemia and talent. The presence of a significant concentration of bohemians

Figure 4. Bohemian index and high tech industry by region.

indicates an environment that is open and attractive to high human capital individuals.

4.3. High technology

With these findings in mind, I now turn attention to the relationship between bohemia and a particular form of innovative and creative activity—that associated with high-technology industry. To get at this, I look at the direct association between bohemian clusters and concentrations of high-technology industry.

The findings here suggest a close association between bohemian clusters and high-technology industry. Six of the top ten bohemian regions also number among the top ten high-tech regions (based on the Milken tech-pole index): San Francisco, Boston, Seattle, Washington, DC, Los Angeles, and New York. The correlation between the bohemian index and the tech-pole index is 0.65 and is significant at the 0.01 level (see Table 2). Figure 4 is a scatterplot that shows the relationship between the bohemian index and the tech-pole index for sample MSAs. San Francisco, Boston, Seattle, Washington, DC, and Los Angeles occupy the upper right hand quadrant of this graph.

To get a better handle on the relationship between bohemian clusters and high-technology industry, multivariate regressions were conducted with the tech-pole index as the dependent variable and the bohemian index as one of a series of independent variables. The regressions examined the relationships between high-technology industry concentrations and the bohemian index, controlling for talent, other amenity measures (i.e. culture, recreation, climate), openness factors (i.e. gay index, melting pot index), population size, and median house value. The results of these regression models are presented in Table 4.

Generally speaking, the findings here suggest a close relationship between the bohemian index and talent. The bohemian index is a strong and unambiguous predictor of high-technology industry concentrations. The results of the various models generated adjusted R-squared values that hover around 0.6 or slightly better, suggesting that these

Table 4. Regression results: Bohemian index and high technology

	Model 1		Model 2		Model 3		Model 4	
Variables	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Boho Index	2.055	0.008***	2.492	0.001***	2.133	0.024**	1.695	0.030**
Gay Index	1.265	0.000***					0.866	0.003**
Talent			20.315	0.000***	21.367	0.000***	10.611	0.038**
Median House Value					0.003	0.667	0.003	0.625
Coolness Index					−0.021	0.891		
R-square	0.6478		0.6161		0.6488		0.7064	
Adjusted R-square	0.6329		0.5998		0.6108		0.6791	
# of Obs.	50		50		42		48	

Note: *Significant at 0.1 level; **Significant at 0.05 level; ***Significant at 0.01 level

models have high predictive power in explaining the geographic factors associated with high-technology concentrations, in particular the role of the bohemian index.

5. Conclusions

This paper set out to provide an empirical analysis of the geography of bohemia and to examine relationships between it, human capital, and high-technology industry. It advanced the basic hypothesis—that a bohemian presence in an area helps establish an environment that attracts other talented or high human capital individuals. The presence of such human capital in a region in turn attracts and generates innovative, technology-based industries. To get at this, the paper introduced a new measure—the *bohemian index*—that directly measures the bohemian population at the MSA level. Statistical research was used to probe the relationships between geographic concentrations of bohemians, talent, and high-technology industry concentration.

The findings support this hypothesis. I find that the geography of bohemia is highly concentrated. I also find evidence of significant and positive relationships between the bohemian index and high human capital individuals and between the bohemian index and concentrations of high-technology industry. The relationship between the bohemian index and high-technology concentrations is particularly strong.

Based upon this, I am led to believe that the mechanisms underlying these findings work more or less this way. The presence of a significant bohemian concentration in a region signals an environment that is open and attractive to high human capital individuals. This in turn stimulates the kind of creativity and innovation associated with high-technology industries. Here it is important to point out that the findings are based on cross sectional evidence, and should not be construed as inferring a direct, causal

and mechanistic relationships between bohemian concentrations and concentrations of high-technology industry. Simply put, concentrations of bohemians at the regional level do not lead or directly produce concentrations of high-technology industry. Rather, the findings suggest that places that have a high concentration of bohemians (or alternatively a high concentration of gay people) reflect an underlying set of conditions or milieu which is open and attractive to talented and creative people of all sorts (including those who work in high-technology industries) and thus create a place-based environment that is conducive to the birth, growth and development of new and high-technology industries.

This paper is just a start: I hope that it helps to open up this area to others. And I hope it helps to stimulate more empirical research on the geography of bohemia and its effects on innovation and other social and economic phenomena.

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Appendix 1

Name	No. of Boho	Name	No. of Boho per 1,000		Name	Boho Index
1 New York, NY CMSA	144,167	1 Seattle-Bellevue-Everett, WA PMSA	9.31	1	Los Angeles-Long Beach, CA CMSA	1.93
2 Los Angeles, CA CMSA	126,740	2 Los Angeles, CA CMSA	9.17	2	New York, NY CMSA	1.82
3 San Francisco, CA CMSA	43,584	3 New York, NY CMSA	9.02	3	Washington, DC-MD-VA-WV PMSA	1.65
4 Chicago, IL PMSA	37,482	4 Nashville, TN MSA	8.96	4	San Francisco, CA CMSA	1.59
5 Washington, DC-MD-VA-WV PMSA	33,360	5 Portland-Vancouver, OR-WA PMSA	8.81	5	Seattle-Bellevue-Everett, WA PMSA	1.57
6 Philadelphia, PA-NJ PMSA	26,171	6 Washington, DC-MD-VA-WV PMSA	8.74	6	Boston, MA-NH PMSA	1.54
7 Detroit, MI PMSA	25,697	7 Minneapolis-St Paul, MN-WI MSA	8.44	7	Nashville, TN MSA	1.53
8 Dallas, TX CMSA	25,465	8 San Francisco, CA CMSA	8.41	8	Portland-Vancouver, OR-WA PMSA	1.45
9 Boston, MA-NH PMSA	22,092	9 Boston, MA-NH PMSA	8.26	9	Minneapolis-St Paul, MN-WI MSA	1.42
10 Minneapolis-St Paul, MN-WI MSA	19,315	10 Austin-San Marcos, TX MSA	7.61	10	Austin-San Marcos, TX MSA	1.41
11 Seattle-Bellevue-Everett, WA PMSA	18,306	11 Las Vegas, NV-AZ MSA	7.60	11	Orlando, FL MSA	1.39
12 Houston, TX PMSA	18,166	12 Orlando, FL MSA	7.49	12	Las Vegas, NV-AZ MSA	1.36
13 Atlanta, GA MSA	17,847	13 Atlanta, GA MSA	7.36	13	Honolulu, HI MSA	1.36
14 Miami, FL CMSA	17,604	14 Denver, CO PMSA	7.03	14	Atlanta, GA MSA	1.34
15 San Diego, CA MSA	15,626	15 Dallas, TX CMSA	6.85	15	Dallas-Fort Worth, TX CMSA	1.24
16 Phoenix-Mesa, AZ MSA	12,688	16 West Palm Beach-Boca Raton, FL MSA	6.32	16	San Diego, CA MSA	1.22
17 St Louis, MO-IL MSA	12,564	17 Honolulu, HI MSA	6.31	17	Chicago, IL PMSA	1.22
18 Baltimore, MD PMSA	11,533	18 San Diego, CA MSA	6.24	18	Denver, CO PMSA	1.22
19 Tampa-St Petersburg-Clearwater, FL MSA	11,446	19 Cincinnati, OH-KY-IN PMSA	6.23	19	Detroit, MI PMSA	1.13
20 Denver, CO PMSA	10,944	20 Chicago, IL PMSA	6.20	20	Salt Lake City-Ogden, UT MSA	1.13
21 Portland-Vancouver, OR-WA PMSA	10,335	21 Greensboro-Winston-Salem-High Point, NC MSA	6.07	21	Cincinnati, OH-KY-IN PMSA	1.12
22 Pittsburgh, PA MSA	9,140	22 Kansas City, MO-KS MSA	6.02	22	Miami, FL CMSA	1.10
23 Kansas City, MO-KS MSA	8,873	23 Salt Lake City-Ogden, UT MSA	5.99	23	Houston, TX PMSA	1.10
24 Nashville, TN MSA	8,781	24 Phoenix-Mesa, AZ MSA	5.98	24	Phoenix-Mesa, AZ MSA	1.06
25 Milwaukee-Waukesha, WI PMSA	8,329	25 Detroit, MI PMSA	5.98	25	Rochester, NY MSA	1.05

26	Cleveland-Lorain-Elyria, OH PMSA	8,296	26	Richmond-Petersburg, VA MSA	5.94	26	Greensboro-Winston-Salem-High Point NC MSA	1.05
27	Orlando, FL MSA	8,043	27	Miami, FL CMSA	5.86	27	Kansas City, MO-KS MSA	1.05
28	Cincinnati, OH-KY-IN PMSA	7,906	28	Milwaukee-Waukesha, WI PMSA	5.84	28	Philadelphia, PA-NJ PMSA	1.05
29	Sacramento, CA PMSA	7,815	29	Columbus, OH MSA	5.70	29	Norfolk-Virginia Beach-Newport News, VA-NC MSA	1.04
30	Columbus, OH MSA	7,555	30	Houston, TX PMSA	5.65	30	Milwaukee-Waukesha, WI PMSA	1.04
31	Indianapolis, IN MSA	6,777	31	Rochester, NY MSA	5.62	31	West Palm Beach-Boca Raton, FL MSA	1.02
32	Norfolk-Virginia Beach-Newport News, VA-NC MSA	6,465	32	Tampa-St Petersburg-Clearwater, FL MSA	5.55	32	Memphis, TN-AR-MS MSA	1.02
33	Las Vegas, NV-AZ MSA	5,614	33	Louisville, KY-IN MSA	5.52	33	Indianapolis, IN MSA	1.01
34	Charlotte-Gastonia-Rock Hill, NC-SC MSA	5,469	34	Indianapolis, IN MSA	5.42	34	St Louis, MO-IL MSA	0.98
35	West Palm Beach-Boca Raton, FL MSA	5,459	35	Philadelphia, PA-NJ PMSA	5.41	35	Richmond-Petersburg, VA MSA	0.98
36	Austin-San Marcos, TX MSA	5,452	36	Charlotte-Gastonia-Rock Hill, NC-SC MSA	5.34	36	Columbus, OH MSA	0.98
37	Rochester, NY MSA	5,393	37	Norfolk-Virginia Beach-Newport News, VA-NC MSA	5.33	37	Sacramento, CA PMSA	0.98
38	Honolulu, HI MSA	5,249	38	St Louis, MO-IL MSA	5.32	38	New Orleans, LA MSA	0.97
39	Greensboro-Winston-Salem-High Point, NC MSA	5,151	39	Sacramento, CA PMSA	5.30	39	Baltimore, MD PMSA	0.97
40	New Orleans, LA MSA	4,926	40	Memphis, TN-AR-MS MSA	5.29	40	Birmingham, AL MSA	0.96
41	San Antonio, TX MSA	4,565	41	New Orleans, LA MSA	5.25	41	Louisville, KY-IN MSA	0.95
42	Louisville, KY-IN MSA	4,500	42	Birmingham, AL MSA	5.21	42	Charlotte-Gastonia-Rock Hill, NC-SC MSA	0.93
43	Richmond-Petersburg, VA MSA	4,386	43	Dayton-Springfield, OH MSA	5.07	43	Tampa-St Petersburg-Clearwater, FL MSA	0.92
44	Memphis, TN-AR-MS MSA	4,365	44	Baltimore, MD PMSA	4.92	44	Dayton-Springfield, OH MSA	0.92
45	Salt Lake City-Ogden, UT MSA	4,356	45	Albany-Schenectady-Troy, NY MSA	4.82	45	Cleveland-Lorain-Elyria, OH PMSA	0.85
46	Dayton-Springfield, OH MSA	4,346	46	Pittsburgh, PA MSA	4.78	46	Albany-Schenectady-Troy, NY MSA	0.82
47	Birmingham, AL MSA	4,180	47	Cleveland-Lorain-Elyria, OH PMSA	4.75	47	Pittsburgh, PA MSA	0.81
48	Albany-Schenectady-Troy, NY MSA	3,749	48	Buffalo-Nigara Falls, NY MSA	4.13	48	San Antonio, TX MSA	0.76
49	Oklahoma City, OK MSA	3,552	49	Oklahoma City, OK MSA	4.06	49	Oklahoma City, OK MSA	0.76
50	Buffalo-Niagara Falls, NY MSA	3,082	50	San Antonio, TX MSA	3.86	50	Buffalo-Niagara Falls, NY MSA	0.70
	MSA Average	16,658		MSA Average	6		MSA Average	1.15

Source: 1990 US Decennial Census PUMS.