From Sustaining Creativity to Creating Sustainability: Talent and Creative Capital for Sustainable Development in Arctic Urban Communities

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Introduction

With rare exceptions, the Arctic regions have always been a showcase of economic marginalization and the polygon for (largely unsuccessful) economic development policies and projects (Agranat 1992; Rea 1976; Hayter and others 1994; DiFrancesco 2000; Bone 2009). Economists have well documented that frontier economies are marginal, vulnerable, structurally truncated and functionally dependent (Agranat 1992; Bone 2009; Rea 1968; Petrov, 2012). A lasting economic disadvantage of a northern resource periphery has been captured by the Harold Innis’s ‘staple theory’ (Innis 1956) and since then has been similarly interpreted by the variety of regional development theories (see Huskey 2006; Petrov 2012). Not surprisingly, over eighty years into economic development policymaking in the North, the circumpolar countries are still searching for better ways to manage their northern frontiers. In Canada, the two consecutive governments proposed comprehensive “northern strategies”, and the new Concept of Socio-economic Development of the North was adopted by the Russian Cabinet in 2000 (Pravitel’stvo RF 2000), while a new strategy specifically targeting the Arctic has been approved in 2013 (Pravitel’stvo RF 2013).

In this respect, the alternative strategy based on enabling local human capacities, such as creative capital, to advance economic development seems to be appealing. As it is described below, there is preliminary evidence that such scenario can be seriously considered. However, any research into this matter faces the lack of basic knowledge about the spatial distribution, characteristics and utilization of creative capital, as well as the lack of conceptual and methodological foundations for conducting such a study. It is important to point out that development based on utilizing the creative capital is not a mere substitution of natural resource as a thrust of ‘modernization’ with human capital. The difference lies in the local embeddedness of the creative capital, its relation to local and Indigenous knowledge and institutions (Aarsæther 2004, Petrov 2011). In this sense, engaging creative capital and knowledge economy is an integral part of a larger sustainable development strategy for Arctic cities and towns.

This paper provides an overview of creative capital geography and characteristics in Arctic cities. The first objective of this analysis is to apply the creative capital metrics to a selection of key Arctic urban settlements. The second objective is to utilize the metrics in order to describe the geography of the creative capital in the state, identify its clusters and possible northern urban centers where alternative development policies may be most applicable.

Creative capital and economic development in Arctic Cities: The Theory

In a staple-driven economy of the Arctic, the physical nature of a resource, not the volume of knowledge invested in its production, provides a necessary comparative advantage. Here, regional innovation systems depend on extremely thin streams of knowledge regulated by a few major institutional agents, first of all the state and large corporations (Bone 2009). In this context, there are few competing technologies or other forms of innovation that could weaken the rigidity of the current techno-economic trajectory (Clark et al. 2001). Consequently, the condition of path-dependency in the frontier remains exceptionally strong, preventing it from
being successful in a modern economic competition. It is typical for peripheral regions, which heavily rely on resource or public sector, to develop a culture of dependency that discourages entrepreneurship and innovativeness (Polèse et al. 2002; Suorsa 2009). Moreover, the disconnectedness of the local firms with communities and networks of practice (Gertler, 2005; Lagendijk & Lorentzen 2007) prevents the acquisition of the tacit knowledge that is so crucial for the modern economic development.

Human agency is a key transformative factor of economy: agents of transformation are another critical and necessary component of change. These agents can be political institutions, firms or non-governmental organizations. However, in the end, the agents of change are individuals and their groups who ‘write’ the innovation history of the region (Bassanini & Dosi 2001). **Creative capital (CC)**, by an analogy to human capital, may be defined as a stock of creative abilities and knowledge(s) that have economic value and are embodied in a group of individuals who either possess high levels of education and/or are engaged in creative (scientific, artistic, entrepreneurial or technological) types of activities (i.e. what Richard Florida (2002) calls “the creative class”).

Existing studies of innovation in peripheral areas also point to an important role of creative capital that, however, must be embedded into social networks and embraced by community (Aarsæther 2004; Barnes & Hayter 1992; Polèse et al. 2002). Whereas the importance of the creative capital in regional development and endogenous growth is hard to dispute, the research into this subject largely ignores urban regions outside the core metropolitan areas. As argued by Petrov (2007; 2008; 2011), although the preoccupation with large urban regions reflects the concentration of the creative capital in metropolitan areas (Florida 2002; Gertler et al. 2002; Polèse & Tremblay 2005), it unjustly marginalizes peripheries as study sites. Instead, it can be argued that the importance of the creative capital for economic development is also true in non-metropolitan contexts. Moreover, there are indications (Copus & Skuras 2006; Petrov 2008) that the creative capital is likely to play an important role in the regional transformation of remote areas, including the Arctic.

The importance of creative individuals in innovative processes in remote urban regions was demonstrated in a number of studies from different regions (Aarsæther 2004; Copus & Skuras 2006; Doloreux 2003; Jauhilinen & Suorsa 2008; Hayter et al. 1994; Hall & Donald 2009; Petrov 2008, Cavin & Petrov 2012). Some researchers have observed that less favorable business and social environments amplify the importance of creativity and require individual innovators and firms to be more creative than in the core (Aarsæther 2004; Copus & Skuras 2006; North & Smallbone 2000; Petrov 2011). Looking at results of creative capital analysis in the Canadian North and other similar reports, Petrov (2008) concluded that it is now enough evidence to suggest that the availability of creative capital improves the prospects for future economic transformation and development in the periphery.

The idea of the CC as an alternative driving force of economic development in the Arctic is also appealing since it provides a way to reconcile the realities of capitalism (which Arctic is inevitably facing) and local modernities, which rely on arctic communities’ endogenous capacities and often take their roots in traditional cultures. Due to the endogenous nature of the CC-based development and its lesser vulnerability to decoupling and marginalization effects, CC-driven development is an enabling process that not only brings prosperity, but also empowers communities to define their own economic destiny and advance towards sustainable development.
Methodological Framework

Measuring creative capital. The CC metrics closely follow the four-sector structure of the creative capital (Petrov, 2007). Four separate indices describe specific groups of the creative capital: entrepreneurs, leaders, scientists and bohemia. This is an attempt to design a basic system of comprehensive measures of the creative capital, based on both educational and occupational characteristics.

The majority of indices are occupation-based. There have been different attempts to identify occupational categories that would be most useful in this case (Florida 2002; Gertler et al, 2002, Petrov 2007, 2008). All indicators are defined as location quotients (LQ). LQ is an advantageous measure, because it compares all regions (communities) with a single common denominator (their country’s baseline), whether a national benchmark or some other chosen indicator. Most measures are computed for labor force 15 years and over. The following indices are utilized:

- **Talent Index (TI)** – is a LQ of adult population who have a university degree.
- **Bohemian Index (BI)** – is a LQ of people with artistic and creative occupations.
- **Leadership Index (LI)** – a LQ of people with leadership and managerial occupations.
- **Entrepreneurship Index (EI)** – a LQ of people with business occupations.
- **Applied Science Index (ASI)** – a LQ of people with occupations in applied and natural science, computer science and engineering (not used in this study due to data constraints).

Data. Most data comes from census or annual reports of the national and regional statistical agencies. As in many comparative studies that cross jurisdictional boundaries the permanent issue is data comparability and compatibility. Inconsistencies in definitions and timing of data acquisition create difficulties in comparing countries directly, but are largely indicative of the overall trends and appropriate for regional compassions within a given country. Most data used in this study date between 2006 and 2010.

Results & Discussion

Creative capital in Arctic Regions and Cities: The Circumpolar Evidence

Arctic Regions. The first objective of this study is to provide an overview of creative capital in the Arctic. Figure 1 presents Talent Index, Leadership Index and Bohemia Index maps for the circumpolar region. The indices are calculated at the regional level to give a necessary background for the city-focused discussion that follows. First of all, it is evident that most Arctic regions have relatively weak CC. At the same time, there are areas that have high TI, LI and BI. In particular, Greenland (Nuuk region), Yukon and certain parts of Russia (Murmansk, Yamal-Nenets and Eastern Siberia) demonstrate levels of TI near of exceeding 1.0 (i.e. respective national averages). In fact, Yamal-Nenets Okrug and Kamchatka Oblast’ were ranked 9th and 10th among top Russian regions in 2002. Many Arctic regions register remarkably high LI (a pattern observed in other studies (e.g., Petrov& Cavin 2012). The highest indices are associated either with larger urban and administrative centers (Juneau) or with very remote and sparsely populated regions (former Koryak Okrug, North Slope Borough). The geographic distribution of BI largely reflects the prevalence of Indigenous population. Most Arctic regions exceed national baselines in relative proportion of residents with occupations in arts and culture suggesting a presence of cultural capital and a considerable potential of Arctic cultural economy, including traditional. In Russia, Taimyr, Koryak, Chukotka Okrugs and Yakutia ranked among top 10 regions in terms of BI in 2002. Finally, EI illustrates rather weak entrepreneurial capacities in the circumpolar North, especially in remote areas with large Indigenous populations. Some high
indices are observed in Russia, but it has to be interpreted in the context of the overall low EI baseline in Russia itself.

Figure 1. Creative Capital Characteristics of Arctic Regions

**Arctic Cities.** If CC metrics is well documented at the regional level, data constraints limit our ability to measure CC at the municipal level. This is especially the case for occupational statistics. The educational attainment data required for computing Talent Index are mostly accessible. TI is also the most directly comparable indicator (as it is not based on jurisdiction-specific occupation classifications). At the same time, occupational characteristics of population are available only fragmentary. As a result, this analysis mostly focuses on TI. The exploratory study includes cities selected based on population (generally exceeding 20,000) and “regional importance” (all regional capitals, if available, are included).

As seen in Figure 2, Arctic cities demonstrate widely varying degrees of ‘talent’ concentration (see also Table 1). Some are certainly ‘creative hot spots:’ for example, Anadyr’s TI (1.72) that is comparable to Moscow’s (1.79). Very high TI is also recorded in other regional (and national) capitals both in Russia and across the Arctic, including Salekhard, Yakutsk, Umea, Magadan, Juneau, Yellowknife, Tromso, Reykjavik and Nuuk. Another large cluster of highly educated labor force is observed in Yamal-Nenets Okrug. In addition to Salekhard, Novy Urengoy and Nadym have TI above 1.4. This may reflect the influx of educated labor migrants in the last decade as TIs in these cities exhibited substantial growth in TI between 2002 and 2010.
Table 1. Talent Index in Selected Arctic Cities (Ranking)

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
<th>TI</th>
<th>City</th>
<th>Population</th>
<th>TI</th>
<th>City</th>
<th>Population</th>
<th>TI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anadyr</td>
<td>10,071</td>
<td>1.72</td>
<td>Noyabrsk</td>
<td>89,507</td>
<td>1.14</td>
<td>Hammerfest</td>
<td>8,022</td>
<td>0.89</td>
</tr>
<tr>
<td>Nuuk</td>
<td>15,469</td>
<td>1.55</td>
<td>Bodo</td>
<td>38,618</td>
<td>1.11</td>
<td>Narvik</td>
<td>15,175</td>
<td>0.88</td>
</tr>
<tr>
<td>Umeå</td>
<td>112,547</td>
<td>1.51</td>
<td>Laleá</td>
<td>73,405</td>
<td>1.11</td>
<td>Faribanks</td>
<td>93,779</td>
<td>0.87</td>
</tr>
<tr>
<td>Salekhard</td>
<td>32,218</td>
<td>1.50</td>
<td>Bilibino</td>
<td>4,449</td>
<td>1.09</td>
<td>Apatity</td>
<td>47,224</td>
<td>0.84</td>
</tr>
<tr>
<td>Novy Urengoy</td>
<td>82,532</td>
<td>1.47</td>
<td>Whitehorse</td>
<td>20,461</td>
<td>1.09</td>
<td>Monchegorsk</td>
<td>37,182</td>
<td>0.83</td>
</tr>
<tr>
<td>Nadym</td>
<td>34,228</td>
<td>1.42</td>
<td>Iqaluit</td>
<td>5,236</td>
<td>0.99</td>
<td>Olenegorsk</td>
<td>24,184</td>
<td>0.80</td>
</tr>
<tr>
<td>Yakutsk</td>
<td>224,083</td>
<td>1.39</td>
<td>Ukhta</td>
<td>97,942</td>
<td>0.98</td>
<td>Taimyr/Dudinka</td>
<td>24,090</td>
<td>0.80</td>
</tr>
<tr>
<td>Yellowknife</td>
<td>18,700</td>
<td>1.29</td>
<td>Harstad</td>
<td>19,164</td>
<td>0.98</td>
<td>Kirovsk</td>
<td>24,469</td>
<td>0.79</td>
</tr>
<tr>
<td>Juneau</td>
<td>30,661</td>
<td>1.29</td>
<td>Norilsk</td>
<td>135,666</td>
<td>0.96</td>
<td>Piteå</td>
<td>40,934</td>
<td>0.77</td>
</tr>
<tr>
<td>Reykjavik</td>
<td>201,585</td>
<td>1.28</td>
<td>Alta</td>
<td>14,815</td>
<td>0.96</td>
<td>Skellefteå</td>
<td>71,870</td>
<td>0.76</td>
</tr>
<tr>
<td>Magadan</td>
<td>84,575</td>
<td>1.27</td>
<td>Labytnangi</td>
<td>21,302</td>
<td>0.96</td>
<td>Vorkuta</td>
<td>68,685</td>
<td>0.74</td>
</tr>
<tr>
<td>Tromso</td>
<td>55,014</td>
<td>1.25</td>
<td>Boden</td>
<td>27,554</td>
<td>0.96</td>
<td>Tura</td>
<td>12,234</td>
<td>0.69</td>
</tr>
<tr>
<td>Murmansk</td>
<td>240,369</td>
<td>1.16</td>
<td>Anchorage</td>
<td>290,588</td>
<td>0.95</td>
<td>Kandalaksha</td>
<td>30,334</td>
<td>0.67</td>
</tr>
<tr>
<td>Severomorsk</td>
<td>53,418</td>
<td>1.16</td>
<td>Vadoso</td>
<td>6,125</td>
<td>0.92</td>
<td>Kiruna</td>
<td>23,049</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pevec</td>
<td>3,660</td>
<td>0.91</td>
<td>Susuman</td>
<td>7,417</td>
<td>0.63</td>
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</tbody>
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On the other hand, small remote urban communities, such as Iqaluit, Dudinka, Tura, and Susuman have low levels of TI (Figure 2). Slightly higher, but still relatively low TI is observed.
in the ‘old’ industrial cities of the Russian Arctic: Noril’sk (0.96), Apatity (0.84), Olenegorsk (0.80), Monchegorsk (0.79) and Vorkuta (0.74).

In Russia it was also possible to calculate the ‘super-talent’ index that accounts for residents with post-masters degrees (professional and PhD). Some Arctic cities performed remarkably well. Salekhard, Nadym, and Yakutsk had this index greater than 2.0, far in excess of Moscow (1.83). In addition, Novy Urengoy, Anadyr, Murmansk, Severomorsk, and Apatity topped the Russia’s baseline (1.0). Some of these cities are booming industrial and political centers, while others are well-establish research hubs (e.g., Apatity). At the same time, very remote and small communities were almost completely devoid residents with advanced degrees (0.03% and 0.05% of labor force respectively in Tura and Pevek, for example).

Arctic cities, especially in Russia, also demonstrate very low Entrepreneurial Index. The measure was calculated for several Russian cities (most regional data agencies have not yet published relevant data from 2010 census). The northern cities, Vorkuta, Noril’sk and Dudinka exhibited extremely low EI, 0.43, 0.49 and 0.43 respectively. In other words, less than 1% of their working-age population is entrepreneurs (defined as labor force participants who hire other labor).

Creative Capital Flight and Turnover: Challenges in Russian Northern Cities.
Migration plays a key role in regulating CC accumulation in urban communities. Faced with the collapse of Soviet economy and/or bust-and-boom cycles of the resource sector many educated residents leave the Arctic (Heleniak, 1999, Petrov, 2006, 2010). At the same time industrialization and attractive labor compensation brings CC to the North during favorable times. Both processes create considerable volatility and turnover in human capital in the region. The most effective mitigation strategy for this problem is education and retention of local youth. In the recent years many northern cities increased their own educational capacities. Yukon Territory heavily invested in Yukon College, Greenland developed its own university, and some Russian cities saw the increase in enrollments in institutions of higher education. In fact, the number of students pursuing higher education in Russia’s Territories of the Extreme North and Equated Areas more than doubled between 1999 and 2009 (Figure 3).

Figure 3. Number of students pursing higher education in the Russian North
(Source: Rosstat, 2011)

Nonetheless, out-migration of college students and young professionals is one of the primary problems for many northern regions. In a pilot survey conducted by the University of Northern
Iowa and State Polar Academy (Van Drasek, 2012), most student-northerners who left the Arctic in order to receive education in St. Petersburg indicated that there were few or no opportunities for higher education in their respective home regions. Prospects for professional success were also generally considered lower at home and students felt compelled to pursue opportunities elsewhere.

At the same time when asked about plans to return to their home regions, the vast majority of participants replied that jobs and career prospects were the most important factors. Many students also indicated that they may not return to the same town, village, or community, but would be interested in relocating to a larger city within their home region. Many, but not most, also indicated that they would have stayed to pursue their studies and careers in the Arctic if the similar professional and educational and educational opportunities existed in their home region. When asked what could be done to improve opportunities for young people to pursue creative careers in their home regions most students suggested an increased government spending on institutions of higher education, related infrastructure, and university instructors. Investment in skilled trades and jobs in Northern regions was also cited as a possibility to train and employ local residents rather than lose them to other regions.

These results are indicative of two things. One is that Russian northern cities are not well positioned to educate and retain CC. Another is that young northerners are willing to consider being educated and living in their home regions, if educational and job opportunities are good. Investment in education in Arctic cities in Russia and in other Arctic counties is an important priority that can assist in sustaining a long-term economic viability of Arctic cities.

Concluding Remarks

A development paradigm based on engaging creative capital and knowledge economy is an integral part of a larger sustainable development strategy for Arctic cities and towns. Bringing, nurturing and sustaining talent and creative capital (broadly defined) provides a new opportunity for northern urban communities to achieve diversification of their economic base, break away from the boom-bust cycles, reduce dependency on external economic and political actors and ultimately improve quality of life for local residents. As we starting to quantify and understand creative capital in the Arctic, it is evident that some Arctic cities have considerable concentrations of highly educated workers and creative professionals. These are predominantly administrative and economic centers, such as Yellowknife, Juneau, Salekhard and Anadyr. Some of these cities rival their much larger southern counterparts like Moscow, St. Petersburg and Krasnoyarsk. On the other hand remote urban communities are almost devoid creative capital. While unavoidable, the leakage of students and creative professionals from the North is a problem that can be partially alleviated if cities, regions and national actors introduce meaningful efforts to attract and retain CC in the North. Without such actions even most highly ranked Arctic cities may lose their potential in times of crisis (as has been demonstrated in the Russian and Canadian Norths in the 1990s). Investment in education is important, but it should come hand-in-hand with policies supporting local CC, which are based on better understanding of its needs and behavior. This pertains both to talent/creative professionals and to local artisans and crafters (the pillar of Arctic cultural economy). Albeit only a few Arctic cities could strongly benefit from building knowledge economy, it is certainly a key ingredient necessary for achieving sustainable development in northern urban communities. In other words, by sustaining creativity cities will be able to create sustainability.
References