Industrial Design Needs in the Mining Equipment Sector: a Preliminary Report

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Executive Summary:

Our initial survey of the mining equipment manufacturers in Sudbury has uncovered three important facts.

1. Local equipment manufactures have the potential to employ a number of creative and talented people from the North.

2. As it stands currently, local equipment manufactures have a need for industrial designers.

3. The majority of skilled designers that respond to jobs posted by the equipment manufactures and that get hired are not from the North.

The three observations have important economic implications for increasing the Norths design capacity and ultimately strengthening the regional economy.
1 Introduction

A recent Statistics Canada report (Shimpf 2008) revealed rapid growth of Creative jobs. These are generally professional jobs based on individual creativity, skill and talent. They include jobs in mathematics and natural sciences on one end and higher level commercial positions on another. Academic, legal, public administration and security occupations, artists and design jobs of all sorts are filled by what Richard Florida calls the new Creative Class. The creative class is not just artists and people in culture-based occupations. The arts and culture sector is crucial to attract and retain creative sector talent, but its only one of four segments, and its hardly ever the largest (Wiesand and Sndermann, 2005.) In an industrial city like Sudbury the core value added industries are likely to be where many of the creative class are found., Indeed Statistics Canada reports that growth was heavily concentrated in manufacturing and in business services. In Sudbury we would expect a concentration of creative jobs in the Mining Supply and Service (MS&S) Sector.

This short paper reports the results of an exploratory study of the design capacity of the MS&S sector in Sudbury. This paper developed out of research project proposed by INORD to examine the economic role of Northern arts communities, their link to design, and the potential for producing value added in the region. (Robinson Stark 2010) Robinson and Stark argued that the linkages between the arts community and economic development have not been described or measured and that there is not much theoretical basis for developing policy in this area. It is therefore necessary to identify what is on the ground, what resources exist and what potential activities are already potentiated? (Robinson Stark 2010) Our preliminary survey of mining equipment manufacturers is a first step in determining what already exists for firms in the mining supply sector (MS&S). The MS&S sector is a large and growing source of earning for the Sudbury region. The companies in this sector already compete successfully in national and international markets.

2 Methodology:

Our observations are based on interviews various mining fabrication companies at the MEMO trade show in October 2010 held at Laurentian University. Twelve companies were asked variations of the following questions:

1. Does your company design the products you sell in house?
2. Does this design take place at your local Sudbury locations?
3. Do you employ designers who do industrial design, ergonomic design and design of the products overall appearance?

4. If so, are the designers employed by your company from the North?

5. What educational background do your designers possess?

6. Where and how do they recruit new designers?

Any questions that the representatives at the tradeshow could not answer were followed up on via phone interviews following the three-day show.

3 Results

Our initial survey of the mining equipment manufacturers (the MEMs) in Sudbury has uncovered three important facts.

1. Local equipment manufactures have the potential to employ a number of creative and talented people from the North.

2. As it stands currently, local equipment manufactures have a need for industrial designers.

3. The majority of skilled designers that respond to jobs posted by the equipment manufactures and that get hired are not from the North.

The three observations have important economic implications for increasing the Norths design capacity and ultimately strengthening the regional economy.

4 The Demand for Designers in the Mining Equipment Manufacturing Community

Of the twelve companies interviewed, eight of them had local in-house design and employed design workers.

The executive in charge of design at Industrial Fabricating Incorporated (IFI), for example, has two designers working under him. One was trained as a Mechanical Technologist while the other was a Mechanical Engineer. Both received their training from community colleges in the Toronto area. Interestingly, one designer was born and
raised in Sudbury, left for training and then returned to work here when IFI posted the
designer job. Two other interesting observations came out of this interview. First, roughly
99% of the designers who respond to job postings are from elsewhere, usually the South.
Second, that IFI has a need for designers all the time and would like to employ more
designers than they currently have on staff. For IFI in particular, a demand for design
talent is not being met, and the design talent that has been recruited to date comes from
somewhere outside of the North.

Walden Equipment, a much smaller operation, also reported a need for more designers.
Currently the company employs one person in charge of the design of their products.
This individual is a trained draftsperson who uses CAD programs to design the mining
equipment sold at Walden Equipment. The representative we spoke to mentioned that
they hire an engineering student from Laurentian University in the summer to meet their
design needs. For Walden Equipment in particular, more design capacity in the North
could be quite helpful. M.T.I (Mining Technologies International) displays a similar
pattern.

M.T.I currently has around ten designers on their full time staff. The vast majority of
these designers were educated elsewhere. Interestingly they trained in a variety of trades,
not just in design. The company posts design jobs on online job banks that are accessible
internationally and not on local employment boards. Nearly all applicants for design jobs
posted by the company on are from southern Ontario or from around the globe. they have
three mechanical engineers on staff currently who oversee design and a team of
mechanical technologists and detailers in charge of product design. Technologists use
CAD programs to draw the machinery being manufactured and detailers are mostly in
charge of printing and bringing the drawings to the shop floor. When asked about the
value of designers within the company, the representatives we spoke to were clear that
designers play an integral role in the quality of the product they produce. Also, it was
made clear that there is always a need for more designers at M.T.I and a shortage of staff
in the design department is an ongoing challenge for this company as well.

Representatives from MTI also mentioned that while the majority of designers re-locate
from out of town, all of the hands-on fabricators (welders, electricians, mechanics etc..)
are from Sudbury and have all been trained locally. The North apparently has the capacity
to meet demands in the hands-on fabrication of mining equipment, but not in the areas of
higher level design. While Sudbury and the North produce a large number of
trades-people, it does not generate nearly the same amount of designers. As a result,
northern communities are missing out on a large portion of jobs created by the design
demand of the mining equipment manufacturing community.
Other interviews produced similar observations.

5 Existing Training Capacity

Currently, educational institutions in the North only offer a handful of programs that are loosely relatable to industrial design. Both Collège Boréal (Sudbury) and Sault College offer similar programs in Mechanical Engineering Technology. Graduates from these programs are prepared to do jobs that involve design components. Computer Aided/Assisted Design seems to be the focus of both these programs. Neither program focuses on industrial design in particular however, as they are more geared towards the training of trades people such as millwrights rather than industrial designers. Cambrian College (Sudbury) offers a graphic design program as well as Art and Design Fundamentals courses. Neither of these programs are focused on industrial design. They focus on web design and honing more fundamental drawing and designing skills. Despite the fact that Sudbury is a major center for developing equipment and services for the world-wide mining industry, local educational institutions appear to have no design program that exploit or even relate to the regional specialization.

Sault College offers an advanced diploma in Mechanical Engineering Technology. Of the Northern colleges, this program appears to offer education that is the most closely related to industrial design. According to the course description Graduates of the three-year Mechanical Engineering Technology Program are prepared to perform design, analysis, and supervisory functions in the production of components in a mechanical engineering environment. (Sault College on-line course description). Although students at Sault College are educated in a form of industrial design, it is not clear that this one design program enough to sustain design capacity in the North.

we have one of the best mining supply and service sectors in the world today. This gives us a significant competitive advantage to have access to these supplies and services in our own backyard. We sometimes take that for granted; we just need to stop and compare ourselves to some of the more remote operations in the world to realize the benefit.

John Pollesel, Vale Canada COO and Director for Base Metal Operations North Atlantic, Speech to Sudbury Chamber of Commerce October 13, 2010 Sudbury, Ontario
6 Policy Implications

There is a supply shortage in the Highly Qualified Labour category for mining equipment producers in Sudbury, specifically in the design field. The shortage suggests an opportunity to enrich the educational offerings and support local production at the same time. In order to take advantage of this opportunity, the region needs a strategy to develop design capacity in the north to better serve industries such as these.

Understanding the supply and demand relationships for design is crucial to uncovering the economic potential for design in the North. Northern educational institutions do not supply enough designers to meet the current industry demand. Increasing design capacity in the north is tied to increasing our human capital. In the same way that providing a School of Architecture fosters potential growth in the construction and building design sector by providing students with valuable sets of skills, a School of Industrial Design would increase the amount of value-added skills possessed by Northerners to be used in the industries requiring industrial design. Training designers locally and thereby making them more available to Northern employers can be hugely important for economic development throughout the region. The need for designers in this sector is evident, and in not harnessing economic potential of the creative people in the North we are missing a lucrative opportunity.

References

