Curation Representation in the Reclamation of Sudbury, Ontario Landscapes

by

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I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.
I understand that my thesis may be made electronically available to the public.

ABSTRACT

...last came the prospector and the mining company, but when they came they made the region theirs, and what they found, made all other industries seem of no account. Even the sulphur that blasted all things living, only made nature's grimners grimmer still, substituted, as it were, deadly purpose for beautiful desolation.

- Stephen Leacock, My Discovery of the West; cited in John M. Gunn, Restoration and Recovery of an Industrial Region, 1995.

An operating mine can last as many as several decades, though individual projects have an average lifespan between 15 and 20 years.¹ This is a relatively short amount of time, and may result in the misconception that mining is 'temporary' or short term, when in fact the entire mining process from open to close lasts much longer. Long-term monitoring and maintenance activities – required to avoid or mitigate environmental contamination – can continue for generations beyond the actual closure of a mine, and the ownership of these landscapes is exceedingly difficult to relinquish when it is accompanied by ongoing liabilities. The legacy that a mine leaves on the landscape can be permanent, "which raises the question of who will be responsible once the mining company is gone?"

In Greater Sudbury, Ontario the restoration efforts of the last 35 years are renowned for their extraordinary re-imagination of the local landscape. What was, at one time, disparagingly referred to as an inhospitable moonscape is, today, veiled beneath a blanket of green which has effectively erased the scars of a long and ongoing history of resource extraction. Where extensive mining landscapes were once the picture of progress, the indispensability of industry has necessitated a new aesthetic trope (regreening) which: responds impartially to stereotypical public criticisms of health, utilizes anthropogenic force for the superficial manipulation of symbolic landscapes, and prioritizes aesthetic preoccupations of 'natural' history over a cultural approach. Communities' social, spatial and historical structures continue to be affected by mine development, and will be even long after mining operations end. Sudbury must consider radical alternatives to prescriptive measures which assess quality of health by degrees of greenness. Who is to say that the reverberations of a hard rock city are singularly unnatural or unhealthy?

A strategy of mediation, **landscape curation**, is explored to intercede in the usual either/or spatial practices: land reclamation or industrial planning. Rather than erase sites of industrial operation via regreening, the following design devises a landscape/architectural strategy which embodies an argument for broadening our knowledge of affected sites and the practices that we use to manage them in the contested sites themselves - as an "arena of speculation"³ - to generate new knowledge and engender new responses: paving the way to radical new conceptions for the future of the Sudbury landscape fabric.

¹ Rike Burkhardt, Peter Rosenbluth and Julee Boan, *Mining in Ontario: A deeper look*, (Toronto, Ont.: Ontario Nature), 4. http://www.ontarionature.org/discover/resources/PDFs/reports/mining-in-ontario-web.pdf

² Ibid, 11.

³ The term arena of speculation originates from Eyal Weizman and refers to the productive terrain for countering dominant ideologies and spatial articulations.

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External: David Warne

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For my nonno,

who saw beauty in the black rock.

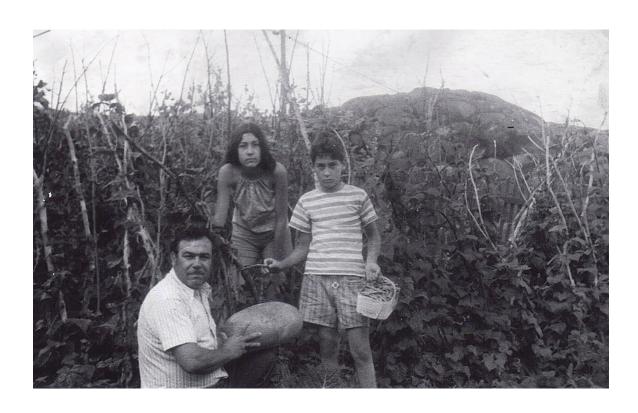


Fig. 0.1 The Family Garden - Spruce Street, Sudbury, 1975 Left to right: Nonno (Grandfather), Mother, Zio (Uncle)

My nonno arrived in Sudbury in 1955, and my nonna followed him soon after in early 1957, arriving from the small town of Supino, Italy. Like many other italians who immigrated to Sudbury for work at Falconbridge and INCO, he brought with him a love for the land and the skills to work it. Against the odds, he turned the landscape behind his home into a well-maintained garden that provided most of the produce for his family. For 50 years he cultivated an incredibly diverse selection of fruits and vegetables, even grafting many of his own fruit trees.

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Fig.0.2 Little Red Door, Sudbury, April 2013

AUTHOR'S NOTE

Little Red Door

En route to Sudbury, Highway 69 is an uninterrupted landscape of tall, ragged walls of Canadian Shield and unusually straight rows of pine trees. Approaching the city, the rock changes to giant smooth black mounds erupting from the ground – little houses settled into their nooks and crannies – covered in implausibly dense brush. Where the roots of these trees go, I am not sure.

This place would be indecipherable without reference to the mining industry and its consequences; events which have irrevocably shaped the landscape, the city and the people (for better or for worse). I do not directly remember these events. I have never lived here for any extended period of time. What I do know I have learned through family.

Although I would have been quite young, I can still recall the black and barren rock behind my mother's childhood home, sparsely populated by the smallest of birch trees that would sprout seemingly out of nowhere. A small red makeshift door at the back of the yard – latched with nothing but a twisted piece of metal and a nail – was a portal into another world. While listening to my grandfather's stories I would climb the 'mountain' hands and feet scrambling over the world's greatest playground. Through the eyes of a child, everything is an adventure.

When I got older that picture acquired a sobering tone as my mom recounted her own childhood memories; attending elementary school under the slag dump, the playground bubbling beneath her feet; working at the mine in the summers, going home black with soot; having the car repainted when the sulphur in the air left it pitted and scarred...

My relationship to the city might be an especially close one, but it is not a unique one. To make sense of this past requires the help of a wide variety of resources – motivated by personal experience but facilitated (or impeded) by the collective.

"a 'collective memory' – as a set of ideas, images, and feelings about the past – is best located not in the minds of individuals, but in the resources they share." $^{_{1}}$

¹ Iwona Irwin-Zarecka, Frames of Remembrance: The Dynamics of Collective Memory, (New Brunswick and London: Transaction Publishers, 1994), 4.



Fig.0.3 Regional Setting

Amalgamated Boundary (as of 2001) Road Distance from Sudbury

①	Barrie		300 km / 3.5 hrs	0	North Bay	130 km / 1.5 hrs
0	Chatham		650 km / 6.0 hrs	①	Oshawa	400 km / 4.5 hrs
0	Elliot Lake		160 km / 2.0 hrs	①	Parry Sound	160 km / 2.0 hrs
0	Kirkland Lake		310 km / 3.5 hrs	①	Sault Ste Marie	310 km / 3.5 hrs
0	London		550 km / 5.5 hrs	①	Toronto	390 km / 4.0 hrs

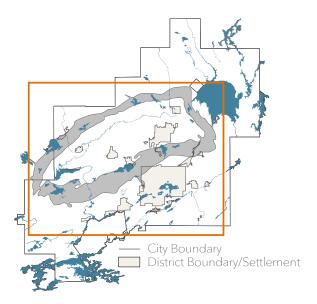


Fig. 0.4 Physical Setting: A Constellated City

Land area is 3,277.38 square kilometres at a density of 49.7 persons per square kilometre. Comparatively, the combined density of all census metropolitan areas is 249.8 persons per square kilometre. As of 2011, Greater Sudbury had a population of 160,274, an increase that is expected to continue over the next 25 years.

...... Sudbury Igneous Compex (SIC)



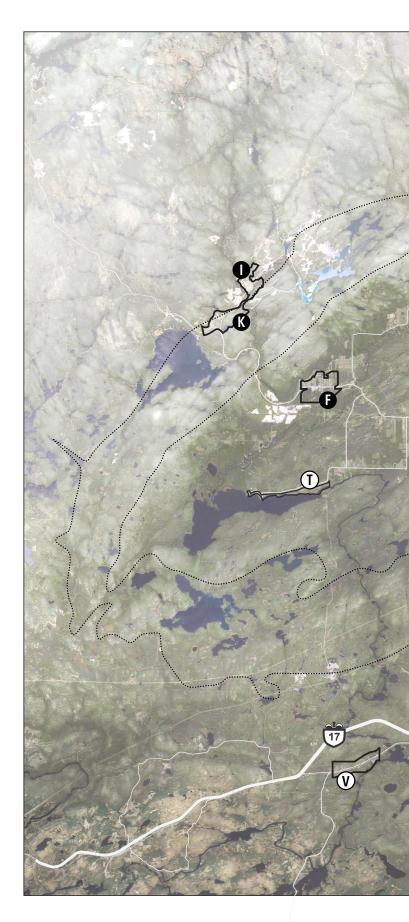
Airport

Urban Settlements

- A Azilda
- B Capreol
- Chelmsford
- Coniston
- Copper Cliff
- 6 Dowling
- **G** Falconbridge
- Garson
- Levack
- Lively-Mikkola-Naughton
- Onaping
- Sudbury
- M Valley East Urban Area
- Wahnapitae

Non-Urban Settlements

- O Blezard Valley
- P Long Lake
- McCrea Heights
- Richard McFarlane Flats
- Skead
- (T) Vermilion Lake
- **(()** Wanup
- (V) Whitefish



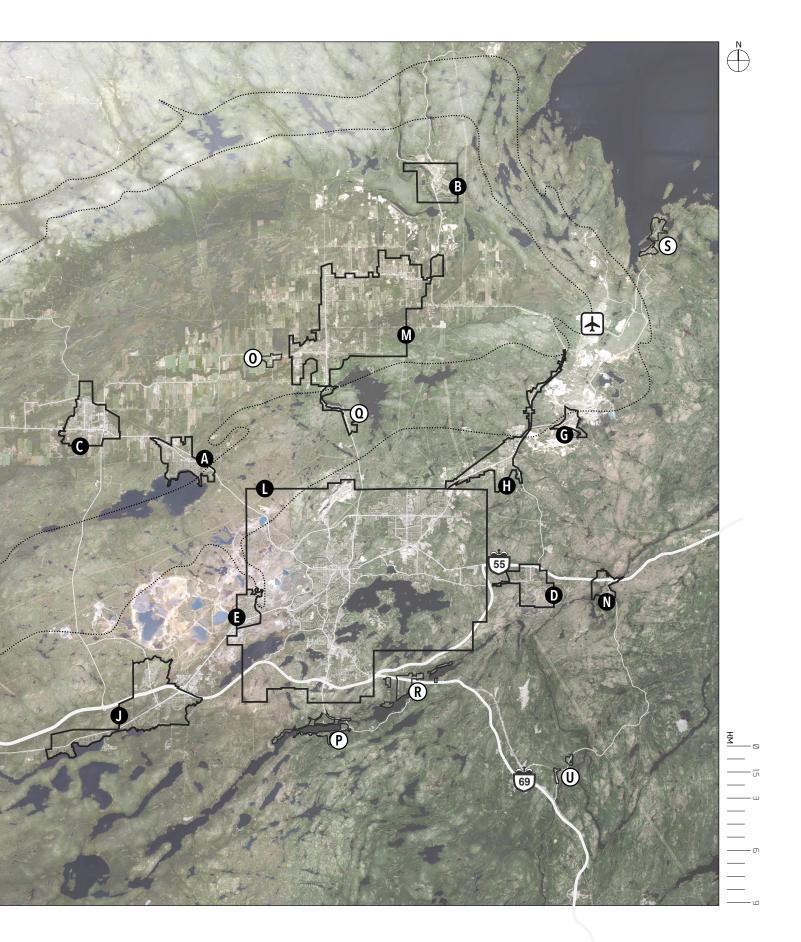




Fig. 0.5 Beaver Pond Wetland, Sudbury, Ontario, July 2013
Beaver Pond Trail access off the end of South Bay Road. Part of the Lake Laurentian Conservation Area.

INTRODUCTION

Canadian Identity

Canada is a nation built upon its natural capital.

- World Wildlife Fund Canada, 2003

The image of Canada as an untouched pristine wilderness is a myth. In the world of mining, it is a land of giants - home to massive deposits of almost every mineral and metal bought and sold on commodity markets throughout the world, a global leader in extraction and processing. Nickel, copper, silver, zinc, cobalt, and rare earth metals, and the list goes on.

- Louie Palu, "The Land of Giants" in The Underground Giant, 2010

Both a vast and diverse territory (9,093,507 square kilometres in land area alone, and an additional 891,163 square kilometres freshwater)¹ it is no wonder that Canada abounds in natural resources and is among the leaders of technology and expertise in fisheries, forestry, agriculture, petroleum products and mining. Historically, explorers ventured to the country not for property but for the resources the land could offer.² Canada contains 10 percent of the world's forests, 25 percent of the world's wetlands, 20 percent of the world's fresh water, and 20 percent of the world's remaining wilderness;³ with this incredible wealth comes a unique global responsibility, and a shared legacy that today belongs to just 35.158 million people (only 0.05% of the world).⁴

The incredible beauty of the natural environment holds profound influence on the deepest values and ideals of a nation. When the image of nature as protected and upheld (Canadians are often perceived as staunch nature lovers) is subordinated by economic reason at odds with this fundamental unit of identity, Canadians' environmental image comes under contestation. The prioritization of a resource economy generally places **global** relationships ahead of **local** consequences; which is an increasingly complex problem as resources come under foreign ownership and management. Those affected by mass environmental degradation, devaluation of property, and elevated health risks intermittently 'take a back seat' as governments oscillate between meeting demands to remedy these conditions – as sustainably oriented – and to remain economically reliable – as industrial leaders, all on the world stage. The divide between **sustainability** and **industry** is seemingly irreconcilable.

Disputes about the environment are often carried on at the top of our voices. Industry can always find reasons to justify its undertakings. Environmentalists can always find reasons to challenge industry's motives. One side regards its activities as essential to progress and economic well-being, the other feels a solemn duty to oppose industrial development that it regards as degrading the natural world.⁵

¹ Natural Resources Canada, GeoAccess Division. "Land and freshwater area, by province and territory" (2005) http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/phys01-eng.htm

² Oiva W. Saarinen, From Meteorite Impact to Constellation City: A Historical Geography of Greater Sudbury, (Waterloo, Ont.: Wilfrid Laurier University Press, 2013), 31.

³ David R. Boyd, Unnatural Law: Rethinking Canadian Environmental Law and Policy, (Vancouver: UBC, 2003), 111.

⁴ Statistics Canada, CANSIM, table 051-0001. Last modified 2013-11-25. http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm

⁵ Thomas R. Berger, Foreword, in *Unnatural Law*, Boyd, ix.



Fig.0.6 French River, Parry Sound, Ontario, July 2014

View from the William Small Snowmobile Bridge (Canada's largest cable supported snowmobile bridge, spanning 300 feet and rising 50 feet); part of a 150 mile snowmobile trail in Ontario. The historic waterway is the first designated Canadian Heritage River. The park follows the waterway route of First Nations (prior to European exploration in the early 1600s), the Voyageurs, and fur traders. The landscape remains much as it was when the first Europeans explored it, and contains more than 450 plant species, and the largest population of eastern Massasauga rattlesnakes.

Fig.0.7 (opposite) Trans-Canada Highway, French River, Parry Sound, Ontario, July 2014

As part of the Northern Highways Program, construction on Highway 69 has been ongoing for a number of years, requiring extensive blasting of the Shield to make way for wider (4-lane) and more direct transportation linkages. Unfortunately, further fragmentation of the landscape into smaller pieces reduces the quality of the habitat and provides travel corridors for predators like wolfs.





Fig.0.8 Abandoned Worthington Mine Feature at New Totten Mine

Class Type B - AMIS No. 05290 (Worthington)/No. 05289 (Totten) - Worthington mine was abandoned following a cavein, leaving a number of hazards including a flooded surface opening (pictured above) and a number of buildings (most are only foundations). Totten, Vale's newest mine (opened February 2014), is sited near an existing sunken shaft and required rehabilitation before developing the new shaft and sinking two fresh air rises; costing \$759 million instead of the expected figure of \$360 million. Nonetheless, (and despite the apparent contradiction) industrial projects are compelled to demonstrate a commitment to sustainable development and the generation of a positive legacy. Strategies may include investment in innovative processes (more efficient and technological), investment in social and environmental projects, brand positioning, and training workers for a safer workplace.⁶

Still relatively new to the mining industry is the implementation of mine closure planning. Stringent requirements have been introduced, set out in Part VII of the Mining Act and Ontario Regulation 282/03, to hold companies financially liable for land reclamation after the operating life of their mine.⁷ A Mine Closure Plan includes technical and financial details on how the company intends to close a particular mine site, how environmental protection will be achieved and how the site will be returned to an acceptable state.⁸ Closure plans typically see post-industrial sites returned to their pre-mine use (generally wildlife habitat or forestry), though a creative approach to mine closure might see former sites transformed into museums or education centres, visitor attractions, scientific centres, recreational areas, gardens or parks, fish farms or agriculture.⁹ Still, despite any attempts to mitigate current and ongoing environmental consequences, historical mining activities, which occurred before mine closure regulations were developed, pose a seemingly insurmountable problem. Referred to as a 'negative legacy', the health, safety, financial and environmental liabilities of abandoned mines is passed on to the current generation by previous mine owners who often no longer exist.¹⁰

The Abandoned Mines Information System (AMIS) is a database that was created by the Ministry of Northern Development and Mines (MNDM) of Ontario to track basic information of mine features and their related hazards (see fig.0.9). There are at least 5,700 abandoned mines across the province and 4,000 of these may be hazardous to public health and safety (see fig.0.10).¹¹ The directory is viewable by Mine Site or Mine Feature, as there may be any number features associated with any single site. There are an estimated 10,000-abandoned mines across Canada varying in size and degrees of danger, and requiring equally diverse degrees of rehabilitation.¹² Canada's environmental performance is mixed.

The estimated number of mining-reliant communities in Canada is 185. According to Natural Resources Canada, this number accounts for communities with a 30 percent or greater employment income derived from mining. Of the 185 mining-reliant communities, 88 actually have an employment income reliance of 50 percent or greater. Canada's largest and best-known mining centre is The City of Greater Sudbury.

No account of Greater Sudbury's story is more comprehensive than the recent publication *From Meteorite Impact to Constellation City* by lifelong Sudburian and (now retired) Laurentian University geography professor Oiva W. Saarinen. About the book he stated "*it gives understanding to what you see with your eyes all around you.*" Saarinen's text is an incredible resource for anyone looking to learn more about the history and interpretation of the city, and there is a considerable amount to absorb. Two main themes

Vale, formerly INCO, (one of two original mining giants in Sudbury, Ontario) released their "Strategic Vision" in the 2013 Sustainability report with the tag-line "For a world with new values." Source: 2013 Sustainability Report, Vale. http://www.vale.com/EN/aboutvale/sustainability/links/LinksDownloadsDocuments/2013-Sustainability-report.pdf

^{7 &}quot;Ontario Mining Act Fact Sheet," Canary Research Institute for Mining, Environment and health, http://www.canaryinstitute. ca/publications/Ontario_Closure_Brochure.pdf.

⁸ Canada, Natural Resources Canada (NRC). 4. Mine Closure, Mining Sequence: Mining Information for Aboriginal Communities, 2011. http://www.nrcan.gc.ca/minerals-metals/aboriginal/mining-information-kit/4179. Cited in: "What happens to mine sites after a mine is closed?" Miningfacts, (Fraser Institute, 2012). http://www.miningfacts.org/environment/what-happens-to-mine-sites-after-a-mine-is-closed/

^{9 &}quot;What happens to mine sites after a mine is closed?" Miningfacts, (Fraser Institute, 2012). http://www.miningfacts.org/environment/what-happens-to-mine-sites-after-a-mine-is-closed/

^{10 &}quot;What are abandoned mines?" Miningfacts, (Fraser Institute, 2012), See more at: http://www.miningfacts.org/Environment/What-are-abandoned-mines/

¹¹ Rike Burkhardt, Peter Rosenbluth and Julee Boan, "Mining in Ontario: A deeper look," (Toronto, Ont.: Ontario Nature), 10.

¹² What are abandoned mines?" Miningfacts, (Fraser Institute, 2012), See more at: http://www.miningfacts.org/Environment/What-are-abandoned-mines/

¹³ NRC. "Mining-reliant Communities, 2001." http://data.gc.ca/data/en/dataset/d365f780-8893-11e0-bbde-6cf049291510

¹⁴ Jenny Jelen, "Sudbury's story, told by LU geography prof", Northern Life, May 18, 2013. http://www.northernlife.ca/news/localnews/2013/05/18-oival.aspx

Classification System

Class	Potential concerns regarding receiving environments	Potential for on site public health concerns	Potential for serious injury or death to occur
А	Yes	Yes	Yes
В	Yes - Limited	Yes	Yes
С	Not Expected	Not Expected	Yes
D	Not Expected	Not Expected	Not Expected

Common Features

1 Openings to the Surface

Test pits/Trenches/Adits Raises/Open stopes Vertical mine shafts 2 Surface Infrastructure

Buildings Equipment Waste

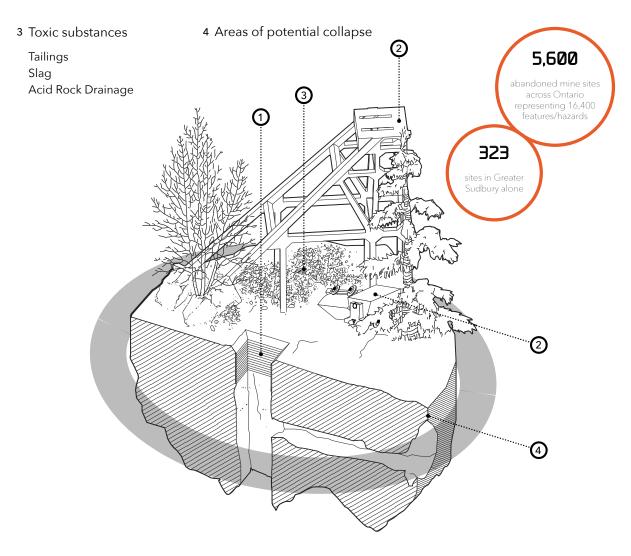
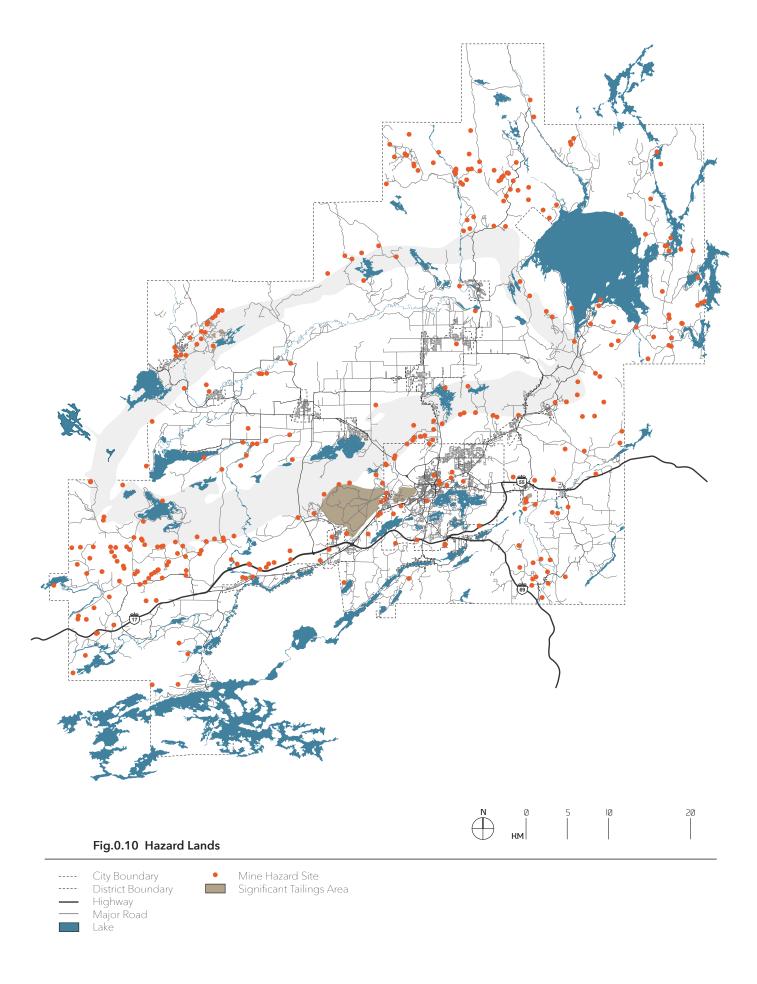


Fig.0.9 Types of Hazards



elaborated in the text, fundamental to the development of the city itself, have been pivotal to this thesis: 'materially in nature' (natural) and 'the human dimension' (cultural).

The thesis is divided into three parts. Part 1 investigates the broad sum of events and performances that have shaped, transformed and reshaped the landscape; the evolution of foundational narratives (and their, at times, mythical qualities), which trace the consequences of industry through to regreening. Elaborating on the consequences of narrative, and its associated images, presents an opportunity to open a dialogue of regreening in the Sudbury area. Rather than engaging with the subject scientifically, and therefore objectively, the thesis presents a forum in which the aestheticized 'green' landscape may be contested subjectively. An attractive aesthetic – even a thriving economy – does not necessarily equate to a strong and positive identity. The thesis is thus framed within the context of representation; focusing on the strong identification the city has had historically with narrative, public image and branding.

Part 2 establishes regreening within the context of an increasingly medicalized vision of environmental thought and praxis to present a strategy which might break from prescribed and conventional strategies to open new and radical alternatives. The translation of knowledge into action as a conscious effort to improve the world in some significant way opens up a spatial story. Geography, Community and Heritage are thus introduced as an-other way of understanding (broadening the scope of knowledge), and thus acting, that creatively recombines the nature-culture binary. The trialectic is an image of social being, which applies to all levels of knowledge formation: ontology, epistemology, theory building, empirical analysis and social practice.¹⁶

The focus returns to a dimension of 'healing' in Chapter 3 to posit the importance of an ethic of care to engage with the 'negative' aspects of the Sudbury narrative. The way to occupy a space of radical openness (to these negative aspects) is by walking the profound edge between the terrible and the beautiful. This space occupies a place between and across the represented and the un-representable (what the representation has left out), existing concurrently and in contradiction. Curation selects and negotiates between sites of reclamation and abandoned mine sites to more broadly articulate the contradictions and complexities of recovery amidst ongoing industrial activity. As the new method for landscape mediation, curation is mobilized through the device of the walking trail. Leveraging existing trails and points of interest, the trail establishes relationships in the city by re-forging historical connections to mine sites that have been lost, forgotten or ignored. The thesis culminates in an open-ended reflection on the future of Sudbury's most significant man-made landscape, the slag heap, as an 'arena of speculation'. Given the complex conditions, physical, mental and social, that form - and are formed by - the city, design should challenge rather than pacify current and emerging agendas. In response to increasingly medicalized vision, exploring a theory which breaks from singularly scientific or environmental concerns presents an opportunity for a radically open approach, imaginative perspectives, innovative alternatives and new relationships to sustainability and forms of reclamation. As David Gissen concludes in his essay "A Theory of Pollution for Architecture": "This architecture might or might not comfort us, but it will begin to articulate some other truths about pollution, and our future life within it."17

¹⁵ David Robertson, Hard as the Rock Itself: Place and Identity in the American Mining Town, (Boulder, CO: U of Colorado, 2006)

¹⁶ Edward W. Soja, Thirdspace: Journeys to Los Angeles and Other Real-and-imagined Places, (Cambridge, MA: Blackwell, 1996), 71.

¹⁷ David Gissen, "A Theory of Pollution for Architecture," in *Imperfect Health*: The Medicalization of Architecture, edited by Mirko Zardini and Giovanna Borasi, (Zürich: Müller, 2012), 130.



Fig.0.11 View from old Highway 144 to Azilda, March 1970.

Watching the slag pour was a regular attraction for locals and visitors alike.

A DISCORD OF LEGACIES Conceptualizing the Sudbury Record

GEOLOGICAL REVERBERATIONS - REFLECTIONS ON SUDBURY'S HISTORIC MINING IMAGE | Chapter 1.1

THE POWER OF NARRATIVE | Chapter 1.2

CONSTRUCTING NARRATIVES - REGREENING & BRANDING | Chapter 1.3

A high degree of intimacy has always existed between the physical and human environment in the area.

The "Sudbury Event" has been the constant physical factor influencing the development of the region since permanent settlement began in the 1800s.



Fig.1.1 Acid Mine Drainage, Copper Cliff, April 2013

Vale property looking towards Benjafield Road. Acid mine drainage is the outflow of acidic water (created when sulphide minerals are exposed to air and water through a natural chemical reaction and produce sulphuric acid) from metal mines, characteristic of large-scale earth distrubances, tailings piles and mine waste rock dumps.

CHAPTER 1.1

Geological Reverberations - Reflections on Sudbury's Historic Mining Image

Look at a Google satellite map of northeastern Ontario, down onto a landscape without labels. The most visible feature is a wide, grey scar to the south cut into the Canadian Shield. Free of political boundaries, this is how the world knows Sudbury.

- Michael Whitehouse, Sudbury Star, 30 July 2011

Rival of the potent agents of the internal world, man undoes what nature has done. Nature has worked for centuries at agglomerating in the bowels of the earth oxides and metallic salts; and man, tearing them out of the earth, reduces them to native metals in the heat of his furnaces.

- Antonio Stoppani, "First Period of the Anthropozoic Era" in Making the Geologic Now, 38.

In Sudbury, daily life is indelibly linked to its remarkable geologic landscape; a mining town seemingly preordained by a two billion year old cosmological accident. The 'Sudbury Event', as the phenomena is referred to, left an oval shaped deposit that measures 60 by 30 kilometres. The most popular and widely accepted theory is that the immense structure was formed by meteorite impact (see fig.1.2). One of the most controversial alternatives to this theory, published in 2009, suggests the impact set in motion all life processes on the planet.¹⁸ Whatever origin, the Sudbury Igneous Complex (SIC) contains one of the largest known concentrations of nickel-copper sulphides in the world (see fig.1.3).

The resulting mining legacy has oscillated between rousing success and devastating downturns. For decades the plumes of smoke that poured from the chimneys of Sudbury's nickel smelters signalled jobs and prosperity. In later years, those same billowing clouds of sulphur, against landscapes of barren rock littered with dead tree stumps and monumental heaps of mining waste, characterized the region as a highly polluted area. In any case, industry casts a forceful image. Mining's most visible impacts are landscape disturbances comprised of decaying structures, ghost towns and surface alterations. Surface alterations are accrued in three categories; the first of these are features of mineral extraction, including shafts, pits, quarries and subsidence depressions; the second are of mining deposits, including piles of overburden, milling wastes, slag, and tailings; and the third are indirect evidences of emissions and pollutants, including damage by acid rain and smokestack fallout. Mining is one of the least efficient primary resource industries in Canada; typically 42 percent of mined material is immediately rejected (as waste rock), and about 96 percent of what is remaining becomes slag and toxic tailings. That means just 2 percent of what is removed from the ground is converted into value.

Stereotypes and negative perceptions dominate these environments and the communities that border them; by the visual impact of these features they become icons of dereliction and decay. Generalizations about these **sur**ficial qualities, albeit not wholly inaccurate, obscure their value as *lived in* places. One could also

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¹⁸ John F. Slack and William F. Cannon, "Extraterrestrial Demise of Banded Iron Formations 1.85 Billion Years Ago," Geology (November 2009): 1011-14. Cited in: Saarinen, From Meteorite Impact to Constellation City, 13.

¹⁹ John Closs, "Public-Sector Unions in Sudbury," in Mining Town Crisis: Globalization, Labour and Resistance in Sudbury, edited by David Leadbeater, (Nova Scotia: Fernwood Publishing, 2008), 76.

²⁰ Burkhardt, Rosenbluth, and Boan, "Mining in Ontario," 17.

²¹ Ibid.

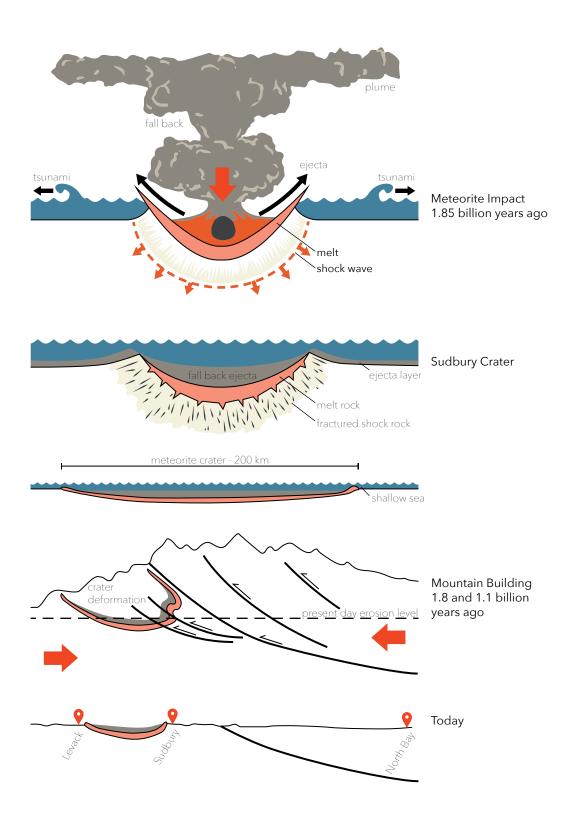
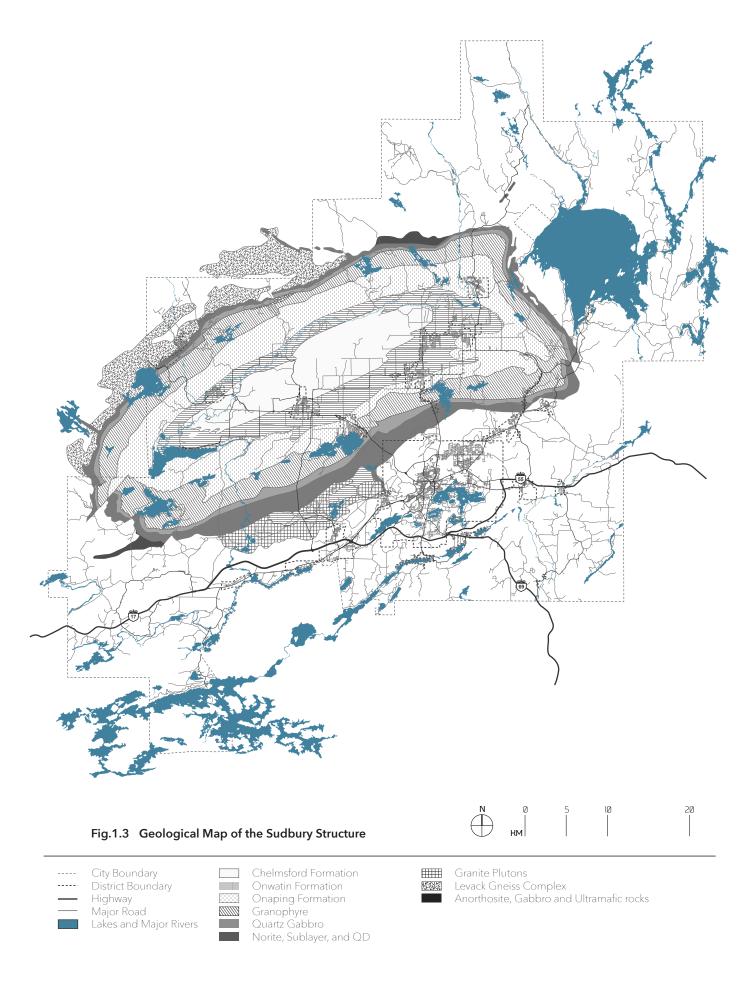


Fig.1.2 The Formation of the Sudbury Crater



say that these surficial qualities are **super**ficial; concerned with the obvious or apparent; cursory; and also, perceived without any depth of character or understanding.²²

It would be unnatural to identify the Sudbury region without referring to its colourful tailings ponds, monumental slag heaps, impressive Superstack and characteristic black rock; marks of man on the landscape significant enough to herald its own geologic era.²³ Canadian lawyer, writer and activist for Aboriginal rights, Bruce A. Clark gives his own account of the landscape in his book *Justice in Paradise*,

I used to imagine myself a witness to the rains, the winds, and the frosts that were working a soil from the rock, and to the blanket of trees and ferns that would gradually spread upward from the south. Then I could see the green driven back, apprehend the noise of the clear-cutting saws, and smell the smelters' sulphur fumes. The rains and winds took back the soils. Sometimes the bedrock seemed sad for the loss of the company of that warming blanket; sometimes it just seemed strong, invincible, indifferent. There is majesty in rock laid bare as it is around Sudbury, exposed blackness set in the endless forest.²⁴

The rock was not laid bare by mining alone; it was the accumulation of a number of factors.

Chartered in 1670, The Hudson's Bay Company (HBC) was formed to reach the North American interior, a 'terra incognita', by means of Hudson Bay. North of Georgian Bay, before the 'City of Greater Sudbury', HBC established several trading posts and introduced French and English fur traders, missionaries and government agents into the trackless, sparsely populated wilderness of the Anishnabe people. The Whitefish Lake post, established in 1824, was the first to include a formal white settlement, the "rock-bound" and "unfriendly shield discouraged the penetration of settlers. Saarinen extrapolates that the company turned Northern Ontario into a 'company town writ large; each subsequent wave of human activity contributed to the region's mass deforestation.

By the 1840s, most of the desirable land south of the Precambrian Shield had been occupied, forcing settlement northward. To facilitate this process, the provincial government took various measures such as constructing colonization roads, granting mining claims, selling timber tracts, and issuing free land grants for agricultural purposes. These measures, in turn, forced the province to develop a surveying system using Salter's baseline and a principal meridian as the foundation for the establishment of timber berths and settlement on a township basis.²⁸

When it became clear that the desired settlement in the Precambrian Shield was not progressing as intended, the province turned its priorities to lumbering, viewing the forests as an important source of revenue.²⁹ Although a key industry over the next decades, little lumbering actually took place for some time. Chicago's Great Fire of 1871, which left 90,000 people homeless, was an incredible period of reconstruction. "American mills had an insatiable appetite for the great pines of the area" which began exporting incredible stocks of

²² www.merriam-webster.com/dictionary/superficial

²³ There are an increasing number of proponents of the Anthropocene, although the exact date of its scientific arrival is currently in debate. The announcement of the Anthropocene marks a shift toward the geologic in cultural sensibilities and practices. A collection of images and short essays are offered in: Elizabeth Ellsworth and Jamie Kruse, eds., *Making the Geologic Now: Responses the Material Conditions of Contemporary Life*, (Brooklyn, N.Y.: Punctum Books, 2013).

²⁴ Bruce A. Clark, *Justice in Paradise*, (Montreal, Qué.: McGill-Queen's University Press, 1999), 15; emphasis added.

²⁵ Sudbury Area Risk Assessment (SARA) Group, "Chapter 2: History of the Sudbury Smelters", Volume 1. See also: Saarinen, "Chapter 2: The Aboriginal/Colonial Frontier," in From Meteorite Impact to Constellation City, 25-37; and, Keith Winterhalder, "Early History of Human Activities in the Sudbury Area and Ecological Damage to the Landscape," in Restoration and Recovery of an Industrial Region, edited by John M. Gunn, (New York: Springer-Verlag, 1995), 17.

²⁶ Saarinen, From Meteorite Impact to Constellation City, 27.

²⁷ Peter C. Newman, Company of Adventurers, vol. 1 (Markham, ON: Penguin Books of Canada, 1985), 1; and, George Bryce, The Remarkable History of the Hudson's Bay Company (Toronto, ON: William Briggs, 1910), 12. Cited in: Saarinen, From Meteorite Impact to Constellation City, 33.

²⁸ Saarinen, From Meteorite Impact to Constellation City, 38; emphasis added. See more: "Chapter 3: Drawing Lines on the Map." 38-49.

²⁹ Ibid., 42.





Fig.1.4 (top) Nickel Tailings #31, Edward Burtynsky, 1996

Fig.1.5 (bottom) Nickel Tailings #34, Edward Burtynsky, 1996

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lumber (and jobs) to the south. Consequently, clearing the area made eventual settlement easier for those who came later.³⁰

Still, the emergence of Sudbury from the wilderness did not come to pass until 1883, with the construction of the Canadian Pacific Railroad (CPR). The arrival of the railway put added pressure on the lumber industry. The requirement for an increasing amount of railway ties, locomotive fuel and pulpwood resulted in less selectivity and greater clear-cutting. A railway camp was established and housed up to 3,350 men who worked for CPR over the next two years.³¹ Located at the junction between the new line (heading westward) and the existing one heading east from Sault Ste. Marie, the site that is now Sudbury was actually incorrectly located by a surveying miscalculation – or cosmic intervention. William Ramsey (a surveyor) mistakenly plotted the rail line north of the lake that now bears his namesake instead of towards the south, as intended, reputedly because his compass pointed to the ore body and he got lost as a result. In 1848 geologist Alexander Murray noted a similar deflection in his compass needle towards the present-day Creighton Mine ore body.³²

Thomas Flanagan, a blacksmith, was likely the first to make the discovery of Sudbury ore, noting in August 1883 the presence copper sulphides on site at present-day Murray mine.³³ In February 1884 the concessions were purchased at a dollar an acre for a total of 310 dollars, and later in October a mining patent was acquired.³⁴ Today the Province of Ontario commemorates Flanagan's site as an historical one.

Though Sudbury can boast a court house, gaol, hospital (on a rather diminutive scale), a public alarm in the form of an immense steel triangle, and a host of unlicensed whiskey holes, we have some hesitancy in terming it anything other than a "clearing". The population is transient and uncertain. Picture to yourself an immense camp meeting ground of primitive style, in the centre place three respectable frame buildings, while around the outskirts of the woods, in the shadow of the hills, extend a fringe of log houses and tents, leaving an immense open space unoccupied and you will have some idea of Sudbury. ³⁵

When the last construction crews departed, instead of melting back into the wilderness, as most of these railway camps did, the CPR depot remained. Sudbury was founded on industry, a curious early chapter in the city's history.

Knowledge of the mineral discovery spread rapidly, soon after the city entered its first mining boom.

Prospectors descended on the region, prepared to endure the clouds of mosquitoes, unforgiving terrain and climate to chase dreams of fortune. Most left empty-handed, but some struck it rich. Their names–Rinaldo McConnell, Francis Crean, Thomas Frood, James Stobie and others–adorn the mines at the core of Sudbury's history.³⁶

By this time, the incredible loss of timber from logging had left behind a lot of slash, which was highly susceptible to wild fires (caused by railway engines for instance). Sometimes, to facilitate staking claims, prospectors would deliberately set fire to an area to expose what was beneath. Flames swept the area a number of times, greatly affecting the forests even before the effects of mining.³⁷

During the 1880s and 1890s the investment capital required to develop the deposits (the separation is

³⁰ Greater Sudbury Heritage Museums, "Logging," *Greater Sudbury Histories*. www.sudburymuseums.ca/index.cfm?app=w_vmuseum&lang=en&currlD=2095&parlD=1401

³¹ SARA Group, "Chapter 2: History of the Sudbury Smelters," 2.

³² Saarinen, From Meteorite Impact to Constellation City, 39.

³³ Ibid, 50.

³⁴ Ibid, 51.

³⁵ Globe and Mail, September 13th, 1884. Cited in SARA Group, "Chapter 2: History of the Sudbury Smelters," 18.

³⁶ Sudbury Area Risk Assessment, Volume 1 - Chapter 2: History of the Sudbury Smelters, 5

³⁷ Saarinen, From Meteorite Impact to Constellation City, 22 and 45. See also author's original sources: Commissioner of Crown Lands of the Province of Ontario, Annual Report for the Year 1883 (Toronto, Ont.: "Grip" Printing and Publishing Co., 1884), 46.





Fig.1.6 (top) Canadian Northern Railway downtown station

Fig.1.7 (bottom) Sudbury aerial looking West, circa 1950

a complicated and expensive process) was prohibitive and not available within the country, necessitating investment from beyond its borders. According to the Sudbury Area Risk Assessment (SARA) Group, "The cycle of foreign ownership and, more pervasively, foreign control over Sudbury's mining industry began before the first shaft was sunk." The formation of the Canadian Copper Company of Cleveland, Ohio, by entrepreneur Samuel Ritchie, in January 1886 was the beginning of a mining dynasty. As noted by the name, the company only extracted copper at first, but he was determined to find a market for Nickel, named the "devil's metal" because it was considered a hindrance to economical copper extraction. In 1889 he found the breakthrough that he was looking for in the form of a scientific paper, "Alloys of Nickel and Steel" which was written in England on the indispensability of nickel-steel to military operations. At the world recognized the potential of the so-called 'war metal'.... the smelting process—and accessibility to refining capabilities—became key to the success of mining companies operating the region.

When it became necessary to reduce the amount of material being transported to the United States for refining, the infamous roast yard technique, a first stage in the smelting process (burning off the ore to separate out the metals), was conceived to address on-site smelting. Any remaining timber in cleared areas, even the smallest, was removed as fuel to set fire to the yards.

In 1888 through 1929, roast yards yielded numerous accounts of almost nightmarish conditions; 11 operated during this time "discharging clouds of acrid smoke across the land and nearby communities." In 1916, a smaller yard at Copper Cliff (the mine opened in 1886 and Canadian Copper moved its offices to the site in 1890) was compelled to relocate due to various complaints. The replacement, O'Donnell roast yard, was removed from the city, incredibly large stretching 2,286 metres by 52 metres wide (see.fig.1.9). Workers ultimately formed a small settlement adjacent to it, and the stories flooded in again, including tales "about horses getting nosebleeds from the fumigations…and of citizens in the new community requiring ropes along the wooden sidewalks to guide them through the smoky haze."

Over the 40-year history of the roast yards they released about 10 million tons of sulphur dioxide at ground level, killing plants and acidifying soil []. Open-bed roasting...allowed some of the nickel and copper to be washed into the soil by rains. The process also required vast amounts of lumber, which led to a depletion of the supply by 1929.⁴⁷

The loss and acidification of topsoil even prevented natural regeneration; plant life has only grown in to the edges of the yard. The remains of the O'Donnell roast yard are still visible today, even in satellite imagery (see fig.1.10). As for the accompanying town site, it died when the activity did. Its counterpoint was rehabilitated and is now Copper Cliff Park. At the time revegetation necessitated the importation of uncontaminated soil as a growth medium.⁴⁸

³⁸ SARA Group, "Chapter 2: History of the Sudbury Smelters", 6.

³⁹ Saarinen, From Meteorite Impact to Constellation City, 52, 57.

⁴⁰ John M. Gunn, Restoration and Recovery of an Industrial Region, (New York: Springer-Verlag, 1995. Cited in: SARA Group, "Chapter 2: History of the Sudbury Smelters", 8.

⁴¹ J. Swift and the Development Education Centre, *The Big Nickel: Inco at home and abroad*, (Kitchener: Between the Lines, 1977). Cited in: SARA Group, "Chapter 2: History of the Sudbury Smelters", 9.

⁴² In the last decade before the turn of the century, the federal and provincial governments tried a number of times to incentivize matte refinement in Canada (by imposing an export duty on the nickel matte), but repeatedly collapsed under threat that companies would turn elsewhere for their nickel, taking the city's local livelihoods with them. Source: SARA Group, "Chapter 2: History of the Sudbury Smelters", 9.

⁴³ SARA Group, "Chapter 2: History of the Sudbury Smelters", 12.

⁴⁴ Ibid, 10. See also: Saarinen, From Meteorite Impact to Constellation City, 102, 262-265.

⁴⁵ SARA Group, "Chapter 2: History of the Sudbury Smelters," 12.

⁴⁶ Ibid, 13-14.

⁴⁷ M. Gunn, *Restoration and Recovery of an Industrial Region*. Cited in: SARA Group, "Chapter 2: History of the Sudbury Smelters", 12.

⁴⁸ Keith Winterhalder, "Environmental degradation and rehabilitation of the landscape around Sudbury, a major mining and smelting area." Environ. Rev. 4. 1996.



Fig.1.8 Inco World War II Poster

[&]quot;Sudbury was among the top few communities that were absolutely critical to the war effort."



Fig.1.9 (above) O'Donnell Roast Yards, circa 1915



Fig.1.10 O'Donnell Roast Yards, circa 1974

From very early on the effects on plant life, topsoil, the rocks and even buildings worried the community, begging the question, were the fumes also dangerous to human health. A Sudbury area farmer was quoted in the Sudbury Star March 4th, 1916:

Some apologists say (cutting down sulphur emissions) can't be done. Nor it won't be done, as long as we fellows grin and bear it—as long as we keep on spitting and coughing. These companies should be indicted tomorrow for maintaining a public nuisance.⁴⁹

That year farmers pushed back, looking for compensation after successive years of damaged crops, and successfully forced Canadian Copper to pay 137,398 dollars (for just a year worth of damage, ending March 31, 1916).⁵⁰ It was not until much later, however, that these and other consequences were brought to greater attention. Other suits were launched, but there were so many the Supreme Court decided to pick just four as representation. An arduous 15 months later, in 1917, they ultimately ruled against the farmers.

Justice J.J. Middleton awarded compensation less than what the companies were offering out of court. His decision clearly indicated that the pollution inflicted by the mining industries was a necessary evil; mining was considered of far greater importance to the Sudbury basin than was farming.⁵¹

Challenges to the mining companies for industrial emissions and discipline to the CPR for its blasting practices were few and far between out of fear that they would go elsewhere rather than face criticism.⁵² By 1905 Sudbury had out supplied New Caledonia (in the South Pacific) to become the lead supplier of nickel to the world, but the threat of shifting operations there and away from Sudbury kept the Ontario government's hands tied.⁵³ The Royal Ontario Nickel Commission published the following in 1917:

It should be pointed out, too, that the mining industry is one of the most effectual agencies in the settlement of our northern and northwestern districts. It affords employment to labour, frequently on a large scale, and provides the best kind of market for farm produce and manufactured goods. Not only the tillers of the soil, but the artisans and merchants...derive a benefit from the increase in business arising out of the mining industry.⁵⁴

The first significant population boom occurred in the 1930's amounting to 32,000 people by the end of the decade;⁵⁵ recovering from the Great Depression more quickly than any other city in North America. While other cities suffered from lack of employment, the world wanted nickel to produce stainless steel for cars and weapons, and so thousands of men from across Canada and Europe migrated to work in the mines. During WWII and into the mid-seventies Sudbury supplied as high as 90% of world demand.⁵⁶

Damage to the local terrestrial ecosystem reached its peak during the 1960s, around the same time that the region area was identified as the largest point source of acid-forming emissions on Earth.⁵⁷ In early acid rain research literature, "the word Sudbury was occasionally used as a unit or measure of pollution."⁵⁸ Media was broadcasting images of environmental activists dressed in t-shirts marked with "No Sudbury" symbols.⁵⁹

51 Ibid, 30.

- 53 Saarinen, From Meteorite Impact to Constellation City, 109.
- 54 Cited in: SARA Group, "Chapter 2: History of the Sudbury Smelters," 26.
- 55 C.M. Wallace, and Ashley Thomson, eds. Sudbury: Rail Town to Regional Capital (Dundurn Press, 1993), 170-177.
- 56 Stan Sudol, "On the homefront: Sudbury basin vital to Allies during WWII," Canadian Mining Journal, October 1, 2005. http://www.canadianminingjournal.com/news/on-the-homefront/1000199427/?&er=NA
- 57 SARA Group, "Chapter 2: History of the Sudbury Smelters," 51.
- 58 M. Gunn, Restoration and Recovery of an Industrial Region, vii.
- 59 Nicola Ross, Mike Grandmaison and Don Johnston, Healing the Landscape: Celebrating Sudbury's Reclamation Story, (Sudbury, Ont.: Vegetation Enhancement Technical Advisory Committee, 2001), 40.

⁴⁹ SARA Group, "Chapter 2: History of the Sudbury Smelters," 29.

⁵⁰ Ibid.

⁵² Ibid, 26.



Fig.1.11 Copper Cliff Roast Yard No.2, circa 1904
Donated by Copper Cliff Museum, City of Greater Sudbury Heritage Museums Collection, Greater Sudbury Public Library, Num. Index CC0115EN

The yard was 1000 feet by 125 feet and was operational between 1899 and 1903

Effects were being realized globally, they could no longer be put off as only a local issue.

Sulphur dioxide gas ... rolled out over the surrounding terrain. The small plants remaining in the sea of stumpage left from the timber harvesting were killed. The rains washed away the soils. The pre-Cambrian bedrock became exposed, to look much as it must have some 12,000 years before when the glaciers had finished scraping their way north. 60

Sudbury was originally called "Sainte Anne des Pins" (Ste. Anne of the Pines), a name given by the Jesuits to their parish, for the incredible red and white pine forests that covered the region. In 1971 Apollo 16 astronauts Charles Duke and John Young visited the city. Infamously, the common misconception was (and sometimes still is) that the astronauts were preparing for the stark environmental conditions on the moon, to which Sudbury bore a resemblance. Actually, due to the unique nature of the Sudbury geological structure, the astronauts were practicing geological reporting by studying the region's shatter cones, evidence of crater formation not unlike what they would find on the moon. In any case, the visit solidified the lunar image in the minds of residents and visitors alike. The nickname 'moonscape' is still used today to the dismay of many who would rather exchange the distasteful association for a more attractive image of the city. 62

⁶⁰ Clark, Justice in Paradise, 14.

⁶¹ Ross, Grandmaison and Johnston, *Healing the Landscape*, 24-25.

⁶² Ibid, 37.





Fig.1.12 (top) Copper Cliff circa 1890
Donated by Copper Cliff Museum, City of Greater Sudbury Heritage Museums Collection, Greater Sudbury Public Library, Num. Index CC0225EN

Fig.1.13 (bottom) Apollo 16 geologic training exercises, Sudbury, Ontario, July 1971
Charles Duke (left) and John Young (right): NASA photo S-71-39840. USGS Open-File Report 2005-1190, Figure 088a.



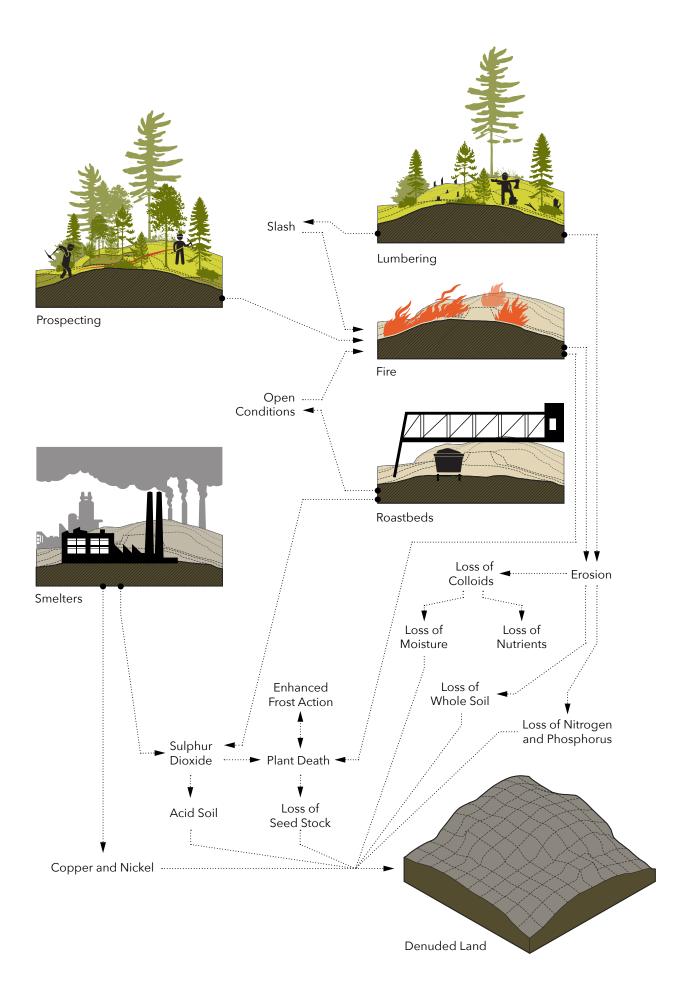




Fig.1.15 West End Hilltop, April 2013 Climbing the hill between Spruce Street and Victoria Street, Sudbury

CHAPTER 1.2

The Power of Narrative

Poor old Sudbury. Nowhere else in the country has been as much maligned. Polluting smokestacks, acid rain, nickel mines, labour unrest and a scarred landscape resembling the backside of the moon, are all indelible images branded into the Canadian psyche, whenever anyone mentions Sudbury. A public relations nightmare.

- Stan Sudol, "He has one tough city to sell [Sudbury image]," Globe and Mail, 15 July, 1998

Aesthetics are pivotal to the way that humans feel and perceive a place. David Robertson, author of a comparative analysis of place identity in American mining towns, contends that for these places burdened by 'unsympathetic perceptual territory' some story or idea (he uses the concept of myth), is often responsible for obscuring its complex realities.⁶³ The word myth, derived from the Greek mythos, denotes a style of narrative discourse. Bruce Lincoln asserts that myth is "ideology in narrative form". An interesting connection is drawn from the derogatory epithet: 'moonscape.'

The moon marks a curious intersection of environments - both natural and cultural.... it underscores the degree to which natural phenomena can also become cultural constructions, become environments of imaginative exchange and conflict.65

So long as the myth contains or contributes meaning to the community it may be found to exaggerate true incidents, omit important historical details or add details for which there is no evidence. Here, emotion carries more weight and substance than fact alone. Nevertheless, the moonscape comprised approximately 20,000 hectares of semi-barren woodland, reducing the original coniferous and deciduous forest to stunted white birch.66 To all appearances, it affirmed the adage that Sudbury was "no place to build a city." Until the emergence of the environmental movement in the 1960s and the completion of the Superstack in 1972, there were no coordinated efforts to deal with the environmental impacts of mining.

In September 1975, when I was still in high school, a Maclean's magazine journalist named Walter Stewart wrote a column titled "Mister Stewart goes to Washington." In that column he unfairly compared Sudbury to other Canadian cities and wrote, "...or Sudbury, which squats in its glum background like a whore in a hovel..." At the time, many in the city were in an uproar and the local media splashed the offending remarks on their front pages. My English Teacher assigned her class to write letters to the editor protesting that slanderous assault on our fair city, and that incident became my first introduction to the incredible power of the media.... Image is everything. One picture is worth a thousand words.68

⁶³ Robertson, Hard as the Rock Itself, 1.

Bruce Lincoln, Theorizing Myth: Narrative, Ideology, and Scholarship, (Chicago: U of Chicago, 1999), xii.

⁶⁵ Madhur Anand and Adam Dickinson, Regreen: New Canadian Ecological Poetry, (Sudbury, Ont.: Your Scrivener, 2009),

⁶⁶ M. Gunn, "Restoring the Smelter Damaged Landscape near Sudbury, Canada," in Restoration and Management Notes 14, no. 2, (1996), 129-136. Cited in: Krista McCracken, "Sudbury: The Journey from Moonscape to Sustainably Green" ActiveHistory, June 10, 2013. http://activehistory.ca/2013/06/11360/#_edn2

⁶⁷ Shawn Van Śluys, Kenneth Hayes and Jocelyn Laurence, eds., Sudbury: Life in a Northern Town (Sudbury, ON: Laurentian

Architecture, 2011), 67. Cited in: Saarinen, From Meteorite Impact to Constellation City, 278.
68. Stan Sudol, "Sudbury Dumped on the Slag Heap of History," Sudbury Star, (Feb. 6, 2004). http://www.republicofmining. com/2013/07/01/sudbury-dumped-on-the-slag-heap-of-history-stan-sudol-originally-published-in-the-sudbury-starfebruary-6-2004/

The way that the Sudbury landscape is perceived is intimately connected to the way its image is conceived and vice versa; trapped by the faculties of its own image (whatever it happens to be at any given moment or in any single instance). While it seems simplistic to broach the idea of imagination despite more obvious and tangible concerns, it is important to note that environmental crisis is not only a technological or scientific problem.

Scientists—ecologists, in this example—imagine that their search to explain the ultimate realities in nature is carried along a logical, unbiased course from hypothesis to test, from results to deductions, and from fact to fact.... But instead, our vision of reality in nature, our search process to find it, and our very reason for conducting the search in the first place are all personally, culturally, and historically driven.⁶⁹

Environmental crisis is just as much a failure of the imagination and a problem of narrative, ontology and epistemology. The way we perceive environmental damage dictates how we react to it, who we blame and the actions we take in response. Prevailing environmental ideology has historically perpetuated a firm division between humans (the urban environment and other man-made artefacts) and non-humans (the ostensibly 'natural' world). Although it may have different manifestations from one culture or religion to another, the essence of the Edenic narrative has captivated us for millennia, constantly evolving, attempting to decipher our relationship to the natural (non-human) world, establishing our role through 'right' models of behaviour, but always perpetuating the binary. Competing interpretations of this narrative generally take one of two forms, the latter generally associated to the industrial revolution. The first motivated humans to tame and control a wild and dangerous nature. This origin story, under capitalism, is a movement from wilderness back to the garden through the transformation of undeveloped, unruly and rugged nature into a state of civility and order. The second condemned humans for polluting and destroying a venerated nature. Contemporary environmentalism has grown out of this second interpretation. Carolyn Merchant traces the evolution of what she calls the "Recovery" Narrative in her book *Reinventing Eden*,

To the extent to which people believe in or absorb [a] story, it organizes their behaviour and hence their perception of the material world. The narrative thus entails an ethic and the ethic gives permission to act in a particular way toward nature and other people.⁷¹

Narrative (and the tools and mode of its facilitation) is affective as an affirmation *or* derision of collective values (to frame and define community ideals); the image establishes a new 'view.' As the basis of how humans discern their connections to the world around them, narrative informs a relationship to global pollution and the actions that can be taken to address it.

Narratives however are not deterministic. Their plots and ethical implications can be embraced or *challenged*. Naming the narrative gives people the power to change it, to move outside it, and to reconstruct it.⁷²

This is where the concept of land reclamation has its genesis, as an admission of guilt for a scorched and endangered earth; recompense for the loss of an intact and pristine natural environment; and even vindication for continued damage with the assurance that whatever the case injury can be undone. It produces an argument, literally fashions a world-view, from compelling images that rely on the *sense of nature*. That being the case, adherents are celebrated as ecocentric, while critics are incriminated as incontrovertibly anthropocentric.

⁷⁰ Michael Mikulak, "The Rhizomatics of Domination: From Darwin to Biotechnology," in An [Un]Likely Alliance, 66

⁷¹ Carolyn Merchant, Reinventing Eden: The Fate of Nature in Western Culture, (New York: Routledge, 2003), 37.

⁷² Ibid; emphasis added.



Fig.1.16 Thomas Cole, Expulsion from the Garden of Eden, 1828



Fig.1.17 Atop Corsi Hill, Sept. 2013
The view towards the Superstack, overlooking the community of Gatchell

CHAPTER 1.3

Constructing Narratives: Regreening & Branding

The land reclamation story illustrates the transformation of our landscape and its importance to the wellness of our community.

- Frank Mazzuca (Chair - the former Regional Municipality of Sudbury), Healing the Landscape, 10.

We are a heroically reactive species when faced with a catastrophe, but averting a crash is easier than salvaging lives after one.

- David Suzuki, Earth Time, 213.

Today, the image of Sudbury is markedly changed and widely recognized for the story of its recovery.

For the best view of the city it is worth a climb to the crest of any number of hilltops across Sudbury. Among the most notable and most transformed is Corsi Hill. From this point, on the horizon is a view of the 381 m tall Superstack, the second tallest free-standing chimney in the world, extending high into the sky and meeting the ground somewhere just out of sight. It vanishes three quarters of the way down behind enormous mounds of blasted stone and slag.

There is a fickleness to the surface of the earth. It is something that can be opened up, turned inside out, piled up. In a traditional landscape, one can imagine that dirt lies beneath the occupied surfaces of the world, that it is the beginning of a terra firma – a solid earth. But here, in the contemporary world, the ground plane is not a stable reference point.⁷³

Here, it is immediately evident our accumulated effects on the earth have become comparable to the forces that shaped it. The view from Corsi Hill happens to be one of the best documented. From the beginning of regreening it has been regularly photographed as a visual record of regreening's success; the before and after are increasingly more dramatic (see.fig.1.23, 44-45). The 2013 Interim Green Space Advisory Panel Report suggested initiating dialogue with the landowner to preserve the "historic benchmark view." Today a manicured parkette at the end of the street acts as a bookend to the neighbourhood, almost inconsequentially as it gives way to great heaps of construction debris and blasted rock (remnants of the development that has gone on here in the last few years); an informal play-scape that looks far more intriguing (if not authentic) than the generic swing set and plasticised nature-scape. A construction vehicle that still sits at the end of the street seems forgotten, reminiscent of a child's toy Tonka truck, it's like stumbling upon a giant's sand box. Safe and artificial play-space foregrounded against the informal playground.

Walking past the park across the heaps of blasted rock and construction debris affords an incredible, uninterrupted view. If you were to take a cross section through the site, it would trace an invisible line

⁷³ Lisa Hirmer, "Dirt Piles: collected thoughts on the landscape of construction," On Site Review. No. 26: Dirt, 18-20. 2011.

^{74 &}quot;Interim Green Space Advisory Panel Report," Greater Sudbury, 2013, 8. http://www.greatersudbury.ca/linkservid/735D205A-BAC2-521F-C7ADE63B79FAFFC7/showMeta/0/



Fig.1.18 Dumping Rubbish Prohibited, Corsi Hill, July 2013

Fig.1.19 (opposite) Corsi Hill Development, July 2013





Fig.1.20 Children's Playground, Corsi Hill, Sept. 2013

beginning with the crushed stone at your feet, drawing your vision slowly up and over blankets of haphazard but dense green growing around black rock as the hill falls away towards Copper Street. Homes nestle into the base of the hill and neighbourhoods stretch out like sinew between bones before connecting with the base of the next hill. Still following that line, it ascends the not long greened-out slagheap that encloses Vale (formerly INCO) like a wall that keeps the city out, and rests upon the super stack; a landscape latent with socio-historical as well as spatial implications.

A forester with the Ontario Ministry of Natural Resources, H. Struik, prepared a map in an attempt to *quantify* the extent of smelter damage to the surrounding forests in the region. Using aerial photographs the damage to lands was assessed. The areas of vegetation damage were divided into two distinct concentric zones; each of the three major smelter sites (at Copper Cliff, Falconbridge and Coniston) is surrounded by its own ellipse, and a fourth surrounds these. The definitions (by Amiro and Courtin) of these zones are still used today.⁷⁵ The first consists of the three smelter zones called the "barrens;" essentially devoid of trees, severely eroded and blackened hilltops, and acidic and metal contaminated soils. The larger encompassing zone is called the "semi-barren" area; generally a mono-culture of stunted white birch.⁷⁶

The support for profound change (in place of incremental and uncoordinated efforts) did not gain critical mass until concern had risen locally, nationally and globally, however, other factors coincided. An exceedingly important one, as Dr. Peter Beckett (associate professor of biology at Laurentian University) has explained, was the opening of the university in 1960.⁷⁷ Laurentian University "brought in people who weren't dependent on industry, people who had nothing to lose by complaining."⁷⁸ It took till the end of the decade though for academics to get involved. A professor in the mid-1960s (quoted in Healing the Landscape) recalled being discouraged by his department head. He explained, "Sudbury was still a company town. If you started working on it (the degraded landscape), it would indicate there was a problem."⁷⁹

A group of concerned citizens formed a partnership to lead other concerned citizens in 1969, called the Sudbury Environmental Enhancement Program (SEEP), led by Ted McHale and Ed Kraker of the Ontario Department of Lands and Forests and Dr. Gerard Courtin and Keith Winterhalder from Laurentian University's Department of Biology. The objectives at that time were to determine the capability of the existing soil as a medium for growth, to determine the limitations and effective levels of amendment, and to plant bare root nursery stock of native and exotic species near Coniston, Skead and on a sandy control site.⁸⁰

The first step was the improvement of emissions by INCO and Falconbridge (the main industrial players in Sudbury by the 1960s)⁸¹, only then could any strategy have some hope of success. Tightened regulation by the province of Ontario was implemented in 1967 with the Air Pollution Act. Emission limits were phased

⁷⁵ H. Struik, "Photo Interpretive Study to assess and evaluate the vegetational and physical state of the Sudbury area subject to industrial emissions. In Sudbury Environmental Enhancement Programme Summary Report, 1969-1973 (Sudbury, Ont.: Department of Lands and Forests, 1973), 6-11 See also: Christopher Wren, "Risk Assessment and Environmental Management," 42.

⁷⁶ B.D. Amiro and G.M. Courtin, "Patterns of vegetation in the vicinity of an industrially disturbed ecosystem," (Sudbury, Ont.: Can. J. Bot. 59, 1981)

⁷⁷ Laurentian University was granted corporate structure by a provincial act in 1960, but operated out of a temporary space in downtown Sudbury offering programs in the Faculty of Arts and Science, and the divisions of Engineering, Business Administration and Nursing. Construction of the original campus was completed in 1964. See: http://laurentian.ca/ historical-highlights

⁷⁸ Scott Murphy, "Pollution Solutions," HK Magazine, May 18, 2006. http:// hk.asia-city.com/city-living/article/ pollution-solutions

⁷⁹ Ross, Grandmaison and Johnston, Healing the Landscape, 45.

⁸⁰ SARA Group, "Chapter 4: Regreening and the Changing Landscape," Volume 1. Jan 2008. 45-46.

⁸¹ Ross, Grandmaison and Johnston, Healing the Landscape, 38.

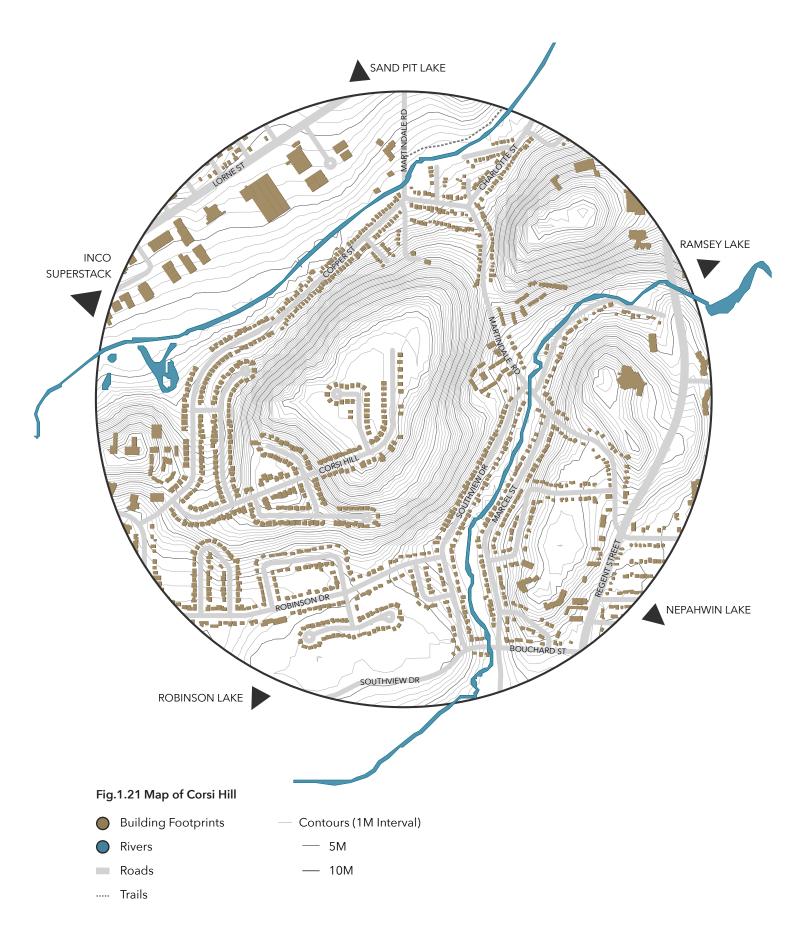




Fig.1.22 Zinc Street, Sudbury, July 2013
At the corner of Copper Street and Zinc St, looking towards Corsi Hill and Gold St which hugs its base.



1981

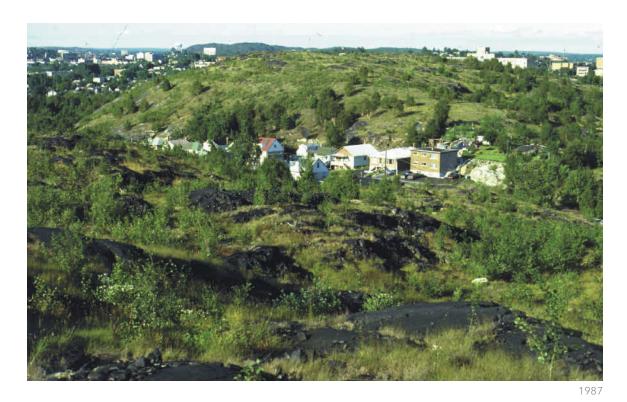


Fig.1.23 Corsi Hill Regreening Progress

What is now known as Corsi Hill is one of the major hilltop developments in Sudbury in the last 10 years. The Greenspace Advisory Panel is asking the developer to preserve this view of Martindale Road, as the change from 1979 to 2001 is an often repeated example of the regreening of Sudbury.





in, increasingly stringent every year. The iconic Superstack was erected in 1970 as an implement of **symptom dissipation**, clearing the air of negative evocations and stereotypes surrounding the denuded and degraded environment. Deceptively, it did little more than carry the pollution high enough that it would travel further afield, diverted beyond the city, before descending on the landscape. It did, however, provide enough relief in the immediate area to permit remediation efforts to take some effect. Further mitigation of emissions was aided by the closure of the Coniston smelter and also of Falconbridge's pyrrhotite (iron ore sintering) plant.

Although the companies were complying with existing emission controls, the bottom line remained of paramount importance; the Coniston smelter was closed because it was obsolete, and the Falconbridge pyrrhotite plant was an uneconomic operation. When the companies complained that the emission reduction targets threatened profits and jobs, the government capitulated, allowing the companies more time to meet reduction targets.⁸²

Notably, INCO had been conducting experiments to restore vegetation to tailings and barren areas as early as the 1950s; Falconbridge began its own in the 1970s. The increased emphasis on the environment required hiring specialists like biologists and environmental engineers to address the environmental issues.

For the first time, internal environmental-watchdog responsibilities shifted from the production personnel to a dedicated department whose sole purpose was to provide technical support and to guide the company in environmental matters.⁸³

When it was determined that the "... poisoning of soil by the addition of acid and toxic metals from smelter fumes created conditions that were unlikely to allow rapid natural recovery", 84 regreening was formally undertaken. The pressures of environmental crisis dictated a response that could affect change quickly and effectively, "to actively combat" the negative image of the region. 85 The motto that adorns the city crest AEDIFICEMUS, means 'Come, Let us build together'. It is adapted from the Book of Nehemiah, a passage where Nehemiah was asked by God to rebuild the city walls of Jerusalem, which had crumbled. After appraising the damage he determined that the job could not be done by one person alone but would require the collective efforts of Jerusalem's citizens. In 1973, the Technical Tree Planting Committee was given the mandate to modify Sudbury's reputation (it was renamed Vegetation Enhancement Technical Advisory Committee or VETAC in 1978). 86 The surface application of lime, fertilizer and seed was a veil of green that could shroud the extensive areas of the characteristic rocky hillsides left barren by smokestack fallout; summer students, unemployed miners and other members of the community came together to participate in the effort.

One hundred and seventy-four students spent the summer of 1978 trundling back and forth over barren rocky slopes where they applied vast quantities of crushed limestone and fertilizer and sowed grass seed.... The next year some 325 students invaded Sudbury's barren hillsides like an army of worker ants.... Year after year between 150 and 300 or more students chipped away at the inventory of barren and semi-barren land that lined Sudbury's transportation corridors.... By 1984, over \$12 million had been spent and a total of 2,636 hectares had been greened. Almost 400,000 trees had been planted as part of a new program that began in earnest in 1982. Starting that year, the Region hired workers laid off by INCO and Falconbridge to plant trees during the spring season before summer

⁸² SARA Group, "Chapter 2: History of the Sudbury Smelters", 50.

⁸³ Ibid

^{84 &}quot;The Reclamation of Sudbury: The Greening of a Moonscape: Community and Industry come together to save the environment," *Viewpoint No. 4*, 2008. https://mining.cat.com/cda/files/2785515/7/Sudbury_Eng.pdf

⁸⁵ William E. Lautenbach, Land Reclamation Program 1978-1984, (Sudbury, Ont.,: VETAC, 1985), 49.

⁸⁶ SARA Group, "Chapter 4: Regreening and the Changing Landscape," 46.



Fig.1.24 City Crest



Fig.1.25 Robinson Lake, Sudbury, July 2013
View from Robinson Park. The Superstack is the most dominant figure on the Sudbury skyline from many points across the city

students were available.87

About 1000 hectares of land between 1978 and 1979 were even cleared of 'unsightly' organic debris before deciding it was counter intuitive to remove organic material that would otherwise decompose and contribute to soil establishment. The debris would be burned and dragged away from the 'viewshed. In the essay "Goals of Restoration," author Anthony D. Bradshaw admits, "The primary goal of restoration is therefore, for most people, an aesthetic one—to restore the visible environmental quality of the area. The program had two primary agendas: to stimulate and foster diversity both economically and ecologically. The negative image had made it difficult to attract businesses and create the kind of diversity necessary to sustain a viable city. The ability to quickly and effectively demonstrate an improved public image – from moonscape to healthy and beautiful city among the trees – would attract new investors to the city. Transportation corridors into the region were the first to be given a new face. Highway 86 into Sudbury (from Falconbridge) was the first thing visitors flying in would be struck by as they left the airport and entered the city. Sudbury hoped it would eventually become known for its restoration and not its degradation.

With the world now facing the prospect of cleaning up horrendous 'Sudburys' in China, India, eastern Europe, and elsewhere, a positive example of improved technology and water reclamation techniques is badly needed. In the early acid rain research literature, the word Sudbury was occasionally used as a unit or measure of pollution. In the future, it is our hope that Sudbury may someday deserve to be used as a measure of restoration.⁹²

Effectively, the restoration program operates as reconciliation:

[1] restore friendly relations between. [2] cause to coexist in harmony; make or show to be compatible. [3] make consistent with another. [4] settle a disagreement. [5] make someone accept (a disagreeable or unwelcome thing)

The application of green pays back an ecological debt. Industry and government (both municipal and provincial) operate under the same ideological principle: that landscape can be commodified as monetary value in the form of nickel rich ore and, as aesthetic value in the form of an attractive and welcoming public image.

In a collaborative case history of the restoration and recovery of Sudbury, it was even stated that by changing the physical appearance of the community the land reclamation program had also fundamentally changed its 'psychological mindscape'.⁹³ Nature is an expression of whatever culture has dictated as ideological. Therefore our construction or 're-construction' of it is the mirror upon which we reflect our cultural ideologies about nature and our role in it.

For the last 36 years, since the regreening program formally commenced, the transformation and healing of the landscape has been a master narrative of success for the region. To celebrate the environmental efforts, Sudbury published the photographic memoir "Healing the Landscape;" the intention was to 'capture the magnitude' of the visual transformation of the landscape and highlight the 'dedication and spirit' of those members and groups within the community who participated in that change.⁹⁴ Ultimately, by sharing the

⁸⁷ Ross, Grandmaison and Johnston, *Healing the Landscape*, 52, 59.

⁸⁸ SARA, Volume 1, Chapter 4 "Regreening and the Changing Landscape", 2008, 30. See also: Winterhalder, 2002.

⁸⁹ SARA, Volume 1, Chapter 4, "Regreening and the Changing Landscape", 2008, 31. See also: Lautenbach, 1985.

⁹⁰ Anthony D. Bradshaw, "Goals of Restoration" in *Restoration and Recovery of an Industrial Region*, 105.

⁹¹ Lautenbach, Land Reclamation Program 1978 to 1984, 9.

⁹² Gunn, Restoration and Recovery of an Industrial Region, X.

⁹³ William E. Lautenbach et al. "Municipal Land Restoration Program: The Regreening Process" in *Restoration and Recovery of an Industrial Region*, edited by Gunn, 118.

⁹⁴ Ross, Grandmaison and Johnston, Healing the Landscape, 8.

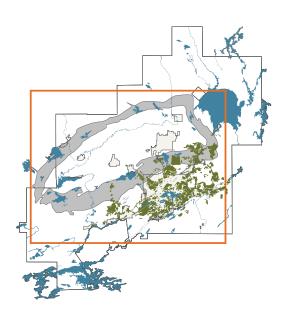




Fig.1.26 Regreening 1978 to 2010

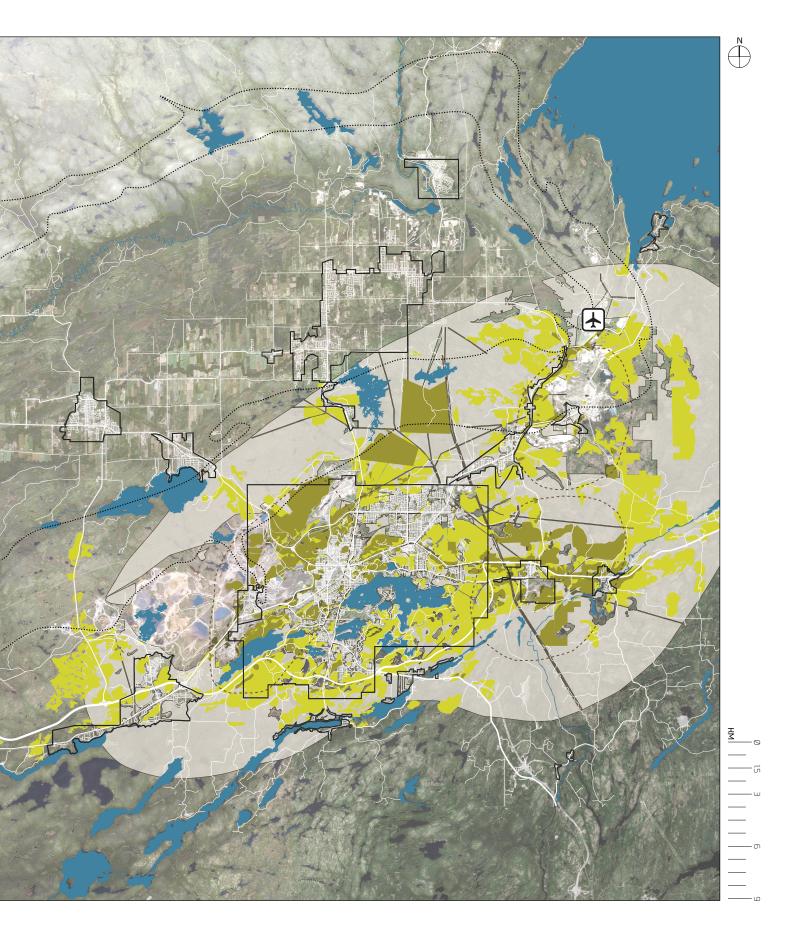
Sudbury Igneous Complex (SIC)
District Boundary
Lakes

Airport

Semi Barren Area* ---- Barren Area

*The unhatched areas within the Barren Area are considered unfeasible to treat

Limed Area Limed and Planted Area Planted Area



story the goal was "to leave the legacy: environmental restoration is possible and attainable and hopefully [to] inspire other communities to heal their landscapes." ⁹⁵

Despite this dramatic re-imaging, unmistakeable marks of industry still exist and even overwhelm traditional urban landmarks and the expansive surrounding wilderness, bearing a contrary history. Although Sudbury's economy is more diversified than it once was, it is still very dependent on the mining industry: and is not to be mistaken as post-industrial. The Sudbury mining cluster is the largest consolidated mining centre in the world. In 2003, the Sudbury Area Mining Supply and Service Association (SAMSSA) was created, a main objective was to remove the negative historical image of Sudbury through branding: "Sudbury Mining Cluster," the leader in underground mining intelligence in Canada. The substitution of the property of the substitution of the substit

History can weigh heavy on our image but if we consistently promote our key message and provide support for important infrastructures and programs and add value to our companies and research agencies/education institutions and support systems we may see one day soon that the old image will disappear and the face of Sudbury mining and its related innovative supply companies will prevail.⁹⁸

The task has proved difficult, when media outside Sudbury write about industry they write stories of the "dark scape" of the community and industry disruptions. The attention paid to the effects of industry has grown, and the images of pollution and devastation have become popularized, almost to the level of high-priced art. The most widely recognized photographs of Sudbury must be Edward Burtynsky's photographic series of nickel tailings. He presents viewers with their own contradiction; the unavoidable concern for the health of our planet and our undeniable reliance on its natural resources in order to sustain our 21st century lifestyles. Depicting awesome and sublime landscapes, the complex quality of being both and at once immensely beautiful and horrifying can be lost in translation. In 2004, Gerald Hannon (for Toronto Life magazine) described one image as "a black and blistered landscape, a fragile line of trees huddling disconsolately in the background, the foreground dominated by a stream so crimson it is as if the earth has bled." 100

Recent technology and research are realizing previously untapped potentials in the Sudbury Basin, inciting renewed activity in the mining sector. Nonetheless, regreening still rivals mining as the core of the city's self-image. In January of this year Sudbury released a plan to rebrand the city as "Sudbury: Canada's Resourceful City" that came with a price tag of 70,000 dollars, not including the costs it would take to implement it. When it was made public it was met with divided opinions by residents and local businesses alike. Many found it distasteful in the way that it conjured up a "resource-full" city, others were upset by the dropping

⁹⁵ Ross, Grandmaison and Johnston, *Healing the Landscape*, 8.

⁹⁶ SAMSSA, http://www.greatersudbury.ca/content/div_councilagendas/documents/samsaa_0927.pdf

⁹⁷ Dick DeStefano and Stan Sudol, "Sudbury Dumped on the Slag Heap of History - Stan Sudol" Republic of Mining, (July 1, 2013). http://www.republicofmining.com/2013/07/01/sudbury-dumped-on-the-slag-heap-of-history-stan-sudol-originally-published-in-the-sudbury-star-february-6-2004/ See also: Dick DeStefano, "Sudbury: Ontario's mining superstore," Sudbury Mining Solutions Journal, May 2013), http://www.republicofmining.com/2013/05/22/sudbury-ontarios-mining-superstore-by-dick-destefano-sudbury-mining-solutions-journal-may-2013/#more-21425

⁹⁸ Dick DeStefano and Stan Sudol, "Sudbury Dumped on the Slag Heap of History - Stan Sudol," (July 1, 2013) Republic of Mining, http://www.republicofmining.com/2013/07/01/sudbury-dumped-on-the-slag-heap-of-history-stan-sudol-originally-published-in-the-sudbury-star-february-6-2004/

⁹⁹ Ibid.

¹⁰⁰ Ibid

^{101 &}quot;Businesses impartial to Sudbury 'resourceful' slogan," CBC News, (January 30, 2014). http://www.cbc.ca/news/canada/sudbury/businesses-impartial-to-sudbury-resourceful-slogan-1.2516983 (accessed April 2014). See also: Laura Stricker, "Sudbury spends \$70,000 to rebrand city," The Sudbury Star, (Jan. 28, 2014). http://www.thesudburystar.com/2014/01/28/sudbury-spends-70000-to-rebrand-city; and, Laura Stricker, "Councillors cool to new Sudbury slogan," The Sudbury Star, (Jan. 29, 2014) http://www.thesudburystar.com/2014/01/29/councillors-cool-to-new-sudbury-slogan





Fig.1.27 Rebranding campaign artwork

of the distinction "Greater" from the city's title; either way it was viewed as a potentially regressive image. 102 Cambrian College graphic design professor Ron Beltrame pointed out the intent for it to demonstrate a double meaning; "Resourceful doesn't necessarily mean digging holes in the ground and cutting trees down." 103 How the brand would be used was unclear, but city councillor Dave Kilgour (who sits on the development corporation board) felt it was a good description for the city, and was quoted by CBC news saying, "We've been in trouble at different times, and we've managed to move forward and show resourcefulness there. I think what you're trying to do is sell a way of life." 104

In February, a strategy to rebrand the downtown was revealed: 'Downtown: A place for you since 1883.' Jeff MacIntyre the chair of Downtown Sudbury said,

We needed to change the face, change the brand downtown. We're trying to change that story. We're trying to show off downtown and the great things that are happening here. We wanted the tools, we wanted a brand we could put forward that tells that story. 105

Whatever story the city tells, and for whatever reasons, image is consistently an ongoing civic priority, and its implications are far-reaching.

¹⁰² CBC News, "Businesses impartial to Sudbury 'resourceful' slogan," (30 Jan., 2014), accessed April 2014. http://www.cbc.ca/news/canada/sudbury/businesses-impartial-to-sudbury-resourceful-slogan-1.2516983 See also: Dan MacDonald, "City councilors say marketing slogan could be a lot 'greater'," Northern Life, 29 Jan., 2014). http://www.northernlife.ca/news/localnews/2014/01/28-slogan-sudbury.aspx

¹⁰³ Ron Beltrame, "Sudbury may be rebranded as 'Canada's Resourceful City'," CBC News, (Jan. 27, 2014). http://www.cbc.ca/news/canada/sudbury/sudbury-may-be-rebranded-as-canada-s-resourceful-city-1.2512519

¹⁰⁴ Ibid.

¹⁰⁵ Darren MacDonald, "Rebranding campaign unveiled at Downtown Sudbury AGM," Northern Life, Feb. 27, 2014. http://www.northernlife.ca/news/localNews/2014/02/27-downtown-rebranding-sudbury.aspx



IDEOLOGICAL REPERCUSSIONS

Problematizing Nature

NATURE AS MORAL IMPERATIVE | Chapter 2.1

UNDER COVER OF GREEN | Chapter 2.2

REDUCTION BY NATURE - REPRESENTATION | Chapter 2.3

CONTEXTUAL TRIAD | Chapter 2.4

LANDSCAPE *MEDIATION* | Chapter 2.5

And now, a delicate film - a new skin - is drawn up.

Over gravel shoulders, de-muscled bones, and grass grows to cover the wounds of a long denounced battle, ridding us of the war-scars that marked this place our place."



Fig.2.1 Industrial Operations, Elm Street, Sudbury, July 2014 North of Clarabelle Road.

CHAPTER 2.1

Nature as Moral Imperative

At times the environmental devastation humankind has wrought on our planet seems overwhelming. But when individuals come together and bring their time, energy, money, quick minds, strong backs and collective will to a task they not only can move mountains, they can recreate a landscape.

- Foreword, Kathy McDonald and Dan Napier, Healing the Landscape, 8; emphasis added.

Nature's resilience never ceases to amaze me. After years of bleakness, Sudbury's landscape has come **full circle** returning to the magnificence and beauty of days gone by.

- Enzo Floriani (Sudbury Master Gardeners), Healing the Landscape, 101.

Floriani makes an important distinction about the recovery of nature in Sudbury: it has come full circle. But what does that mean exactly? When referring to the recovery of Sudbury's landscape, literature generally uses restoration or reclamation in place of other terminology (the most comprehensive text on the subject is titled "Restoration and Recovery of an Industrial Region"). Environmental practitioners use a wide range of other terms including remediation, rehabilitation, and mitigation, but the precise use of one over another holds subtle and important differences. Restoration and reclamation are fundamentally similar, as both are invested in the re-creation of a landscape in form and function. The former is the process of returning a landscape to its original condition not only to a useful one, and anticipates (only after rebuilding an ecosystem that existed before the site was disturbed) a return to a healthy, vigorous and even perfect condition.² The latter process is the act of reconverting disturbed land to former or productive use. Derived from the verb 'to reclaim', reclamation is also, in a sense, the deliverance from error to a right course, with the inference that some negative activity, action or event has taken a landscape away, and that only by restoring it, do we take responsibility over it back. Restoration and reclamation seem to suggest that the results of industrial processes are not landscape at all, that they have nothing to do with our conceptions of nature; they are 'unclaimed' as though not our responsibility until redeemed. From here, it is easy to extrapolate a thorough definition of regreening. The word green can be traced to the roots of the words 'grass' and 'grow' in the sense of the colour of living plants.³ A principal characteristic of something that is alive, 'green' becomes concerned with supporting or protecting the living.

In a society like ours, so thoroughly enchanted by the myth of 'nature,' it is not surprising to discover the wide-ranging dissemination of green. And by assimilating green the built environment aspires to craft a body that is ideal or at least in good health...⁴

The presence of green is the antidote to our increasingly considered 'unnatural' and consequently unhealthy

¹ Anthony D. Bradshaw, "Introduction and philosophy," in *Handbook of Ecological Restoration*. Vol. 1. Edited by Martin R. Perrow, and Anthony J. Davy, (Cambridge: Cambridge UP, 2002), 3.

² Ibid.

Erin Hollingsworth, "An Etymology of Green," HowStuffWorks.com, (January 10, 2012). http://entertainment.howstuffworks.com/arts/literature/green-etymology.htm

⁴ Giovanna Borasi and Mirko Zardini, "Demedicalize Architecture," in Imperfect Health, 19

urban condition.⁵ That which is not green is not alive, and therefore has no implicit value (besides the motivation to restore), and no place within the larger conception of nature's reclamation. The presence of the prefix 're' tacked onto the word greening indicates that it is not just about the creation of a healthy landscape (in whatever image that could be) but explicitly a **return** to a previous condition, a **repetition** of a previous state,⁶ and **retaking** ownership over the future of the landscape. Cure is, for the human condition, what restoration is to the post-industrial scarred landscape, the end of a condition and the procedure that ends it. The end is absolute, counteracting affects and reversing effects, to return to a state of health equal to that prior to the diagnosis. The conditions that fall between the original pristine nature and its recovery are thus equated to illness (or disease) and the lack of green a symptom to be treated.

Environmentalism itself is increasingly medicalized.⁷ *Unnatural Law: Rethinking Canadian Environmental Law and Policy* was published in 2003 to refute Canada's claims to being a world leader in sustainability. David R. Boyd, the author, presented the analysis in three parts, "...like the three stages a doctor goes through when a patient comes in for a check-up": an examination, a diagnosis and a prescription.⁸ Thomas R. Berger, author of the foreword, introduced Boyd declaring, "The doctor is in." Boyd's text is a critical example of a medicalized approach to land reclamation. This kind of medicalization is evident in regreening literature as well. In the appendices of *Healing the Landscape*, regreening is summarized in a 'basic recipe'; quantities of lime, fertilizer and seed mixture can be mass distributed and applied anywhere, uniformly prescribed and administered like a medication.¹⁰ In the 2011-2015 Five Year Plan, seedlings have been 'prescribed' at a ratio of: 40% Jack Pine, 40% Red Pine, 10% White Pine and 10% White Spruce.¹¹ Not unlike transplanting healthy tissue, forest floor 'mats' (which include soil microorganisms, insects and organic matter) are being salvaged from the Highway 69 South four lane construction corridor and imported to reclamation sites.¹² "Health is a desired state, but it is also a prescribed state and an ideological position." It has become the new morality.¹⁴

In 2003, in celebration of 25 years of Land Restoration, the city opened a contest to the general public to encourage citizens to express what the program has meant to them and Greater Sudbury based on the theme and template, a 'thin green line'. The idea behind it was "a reflection of the ongoing work required to ensure that diverse self-sustaining ecosystems replace barren land throughout Greater Sudbury," and "of the rather fragile relationship between the regreening hillsides and the physical state of the soil, the air and the water" in the City. The "Thin Red Line" from which the theme draws its inspiration actually refers to any thinly spread military unit holding firm against attack and metaphorically meaning the barrier which the relatively

⁵ Borasi and Zardini, Imperfect Health, 19.

^{6 &}quot;Definition of Re- in English," Oxford Dictionary (British and World English). http://www.oxforddictionaries.com/definition/english/re-

⁷ Borasi and Zardini, "Demedicalize Architecture," in Imperfect Health, edited by Borasi and Zardini, (Zürich: Müller, 2012), 15-37.

^{8 &}quot;About the Book," Unnatural Law: Rethinking Canadian Environmental Law and Policy. http://www.unnaturallaw.com/1aboutbook.htm>

⁹ Thomas R. Berger, "Foreword," in *Unnatural Law: Rethinking Canadian Environmental Law and Policy*, David R. Boyd, (Vancouver: UBC, 2003), ix.

¹⁰ Ross, Grandmaison and Johnston, Healing the Landscape, 120-121.

^{11 5} Year Plan: Regreening Program 2011-2015, VETAC (Dec. 21, 2010), 5. http://www.greatersudbury.ca/content/div_landreclamation/documents/5%20year%20plan%20-%20%20FINAL1.pdf

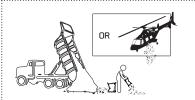
¹² Ibid, 15

¹³ Jonathan M. Metzl and Anna Kirkland, eds., *Against Health: How Health Became the New Morality*, (New York and London: NYU Press, 2010), 1-2.

¹⁴ Ibid

¹⁵ Stephen Monet, "City Launches 'Thin Green Line' Contest Celebrating 25 years of Land Reclamation", Sep. 15, 2003. http://www.greatersudbury.ca/living/newsroom/newsreleases/city-launches-e28098thin-green-linee28099-contest-0d0acelebrating-25-years-of-land-reclamation/ See also: Land Reclamation Program 2003 Annual Report, (Economic Development and Planning Services, Dec 2003), 4. http://www.greatersudbury.ca/content/div_landreclamation/documents/land_and_rec_report2003.pdf

THE REGREENING "RECIPE"



Crushed Agricultural Limestone

(10 tonnes per hectuare)

Deliver limestone in 25 to 40 tonne truck loads to staging areas near sites. Manually shovel into bags (4.5kg/bag) to faciliate later hauling and distribution. Where possible, bags are moved by pickup or 5 tonne trucks. Distribute bagged lime in 1 to 2m grid intervals and then spread evenly across grid.



Fertilizer

(390kg per hectare)

Purchase in 50kg bags and transport to sites. Empty into pails and spread by hand.



Grass (75%)/Legume (25%) Seed Mixture

(45kg per hectare)

Spread late August/September with cyclone seeders. Typical species include: Red Top, Red Fescue, Timothy, Canada Blue Grass, Kentucky Bluegrass, Bird's foot Trefoil & Álsike Člover

Fig.2.2 Regreening Recipe

15.1%

1.3% Shrubs/Understory Trees

127,921 Plants

Green Alder

14.1%	Red osier dogwood Cornus sericea
8.5%	Seviceberry (Amel. sp.) Amelanchier sp.
8.0%	Wild raisin Viburnum cassinoides
6.9%	Mountain maples Spicatum acer
5.8%	Alternate-leaved dogwood Cornus alternifolia
5.8%	Siberian pea shrub Caragana arborescens
4.7%	Dwarf bush-honeysuckle Diervilla lonicera
4.6%	Red elderberry Sambucus pubens
4.4%	Round-leaved dogwood Cornus rugosa
3.9%	Black chokeberry Aronia melanocarpa
3.7%	Striped maples Pensylvanicum acer
14.4%	Other

Common elderberry Sambucus canadensis Highbush cranberry Viburnum trilobum Mugho Pine Pinus Mugo

Nannyberry Viburnum lentago Winterberry holly Ilex verticillata Staghorn sumac Rhus typhina Buffaloberry Shepherdia canadensis

Narrow-leaved meadowsweet Spiraea alba Bearberry Arctostaphylos uva-ursi

Ninebark Physocarpus opulifolius Pin cherry Prunus pensylvanica Swamp rose Rosa palustris Steeplebush Spiraea tomentosa Hobblebush Viburnum lantanoides Prickly wild rose Rosa acicularis ssp. sayi Sweet gale Myrica gale

Large-leaved meadowsweet Spiraea latifolia Wintergreen Gaultheria procumbens

Choke cherry Prunus virginiana Buttonbush Cephalanthus occidentalis Smooth wild rose Rosa blanda Mountain holly

Sandcherry

Canada plum Prunus nigra

Red-twigged servicberry Amelanchier sanguinea

4.5% Deciduous

428,688 Trees

48.2%	Red oak <i>Quercus rubra</i>		
28.6%	Black locust Robinia pseudoacacia		
9.9%	Maple		
	Red maple Acer rubrum		
	Sugar maple Acer saccharum		
	Silver maple Acer saccharinum		
6.7%	Ash		
	Red ash Fraxinus pensylvanica		
	White ash Fraxinus americana		
	Black ash Fraxinus nigra		
4.5%	Yellow birch Betula alleghaniensis		
1.2%	Russian olive Eleagnus angustifolia		
0.7%	Other		
	Bitternut hickory Carya cordiformis		
	American beech Fagus grandifolia		
	White oak Quercus alba		
	Bur oak Quercus macrocarpa		

94.1% Coniferous

	8,919,539 Trees
29.2% 27.8% 18.6% 18.3% 2.1% 2.1%	Jack pine Banksiana pinus Red pine Resinosa pinus White spruce Picea glauca White pine Strobus pinus Eastern white cedar Thuja occidentalis Black spruce Mariana picea Other
1.7/0	Tamarack <i>Larix laricin</i> a Norway spruce <i>Abies picea</i>
	European larch Decidua larix Japanese larch Kaempferi larix
	Eastern hemlock <i>Tsuga canadensis</i> Balsam fir <i>Abies balsamea</i>



Fig.2.3 Spruce Street, West End, Sudbury, July 2013 In older subdivisions, the characteristic black rock muscles its way in between houses.

limited armed forces of a country present to potential attackers; specifically, the military action of the 93rd Highland Regiment at the Battle of Balaclava.¹⁶ In both English and Hebrew the red line also figuratively denotes a point of no return or a line in the sand, "a limit past which safety can no longer be guaranteed."¹⁷ Variations on 'the line' have been extrapolated to a number of other areas, for instance in car racing the 'red line' on a tachometer indicates an engine's safe limit and the 'Thin Blue Line' is a show of support for law enforcement officers who stand between the good and the bad. The green line is more than a statement on health, it is the moral divide between the "uncomplicated choice between natural things, which are good, and unnatural things, which are bad."¹⁸

At the height of industrial activity the city was called a denuded moonscape, ugly, sick and unhealthy. Sulphurous smog stained extensive surfaces of rock black, a distinctive feature of the Sudbury landscape. In 2012 the artist collective Bik Van der Pol held a concert on the rocks (among other notable landscapes), and stated in a media release: "The black rocks, both loved and hated by the citizens of Sudbury, are an unavoidable part of the city." In June the year before, they attended to a section of black rock at the corner of Mount Adam Street and The Kingsway in a form of performance art. For a week they tried to physically scrub the rock clean using an environmentally friendly cleaning product, Eco Mist, and water. Laura Stricker for The Sudbury Star wrote an article on the event titled "Mining legacy proves difficult to erase." The metric of regreening's success, as a cure, is its ability to relieve (reduce or even eliminate) this and other impressions that the landscape left on the public. The most significant work operates at the surface to denounce the negative, appearing increasingly greener, lush, sustainable, attractive, and healthy. "Nature as moral imperative always implies a very particular vision of what ideal nature is supposed to be." 21

The healing the landscape narrative renders the primacy of nature explicit, as "a moral obligation, a commodity and a mark of status and self-worth."²² As a result, nature and health can not possibly be questioned by anyone except those who are necessarily aligned with destructive forces: anthropocentric and necessarily opportunistic.

The very idea of 'reinventing' nature is no doubt offensive to many people because the natural is so bound up with their deepest, unreflected, individual, social, and national values.²³

In this way, "Nature becomes our dogma, the wall we build around our own vision to protect it from competing views. And like all dogmas, it is the death of dialogue and self-criticism." The indispensability of industry has necessitated a new aesthetic trope that implores us to find purposeful distractions from the unappealing effects of resource extraction on landscape and community by: (1) responding impartially to stereotypical public criticisms of health; (2) utilizing our force for the superficial manipulation of symbolic landscapes; and, (3) prioritizing aesthetic preoccupations of 'natural' history over a cultural approach.

^{16 &}quot;Crimea: The Great Crimean War, 1854-56," by Trevor Royle, 266-268.

^{17 &}quot;Redline - Definition," http://www.merriam-webster.com/dictionary/redline. See also: Ben Zimmer, "The Long History of the Phrase 'Red Line'," Wall Street Journal, (July 19, 2013). http://online.wsj.com/news/articles/SB10001424127887323993804578612210634238812?mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424127887323993804578612210634238812.html

¹⁸ Cronon, Uncommon Ground, 25.

¹⁹ Jenny Jelen, "A rock show on the rocks," Northern Life, Aug. 2, 2012. http://www.northernlife.ca/news/lifestyle/2012/08/02-rock-show-sudbury.aspx

²⁰ Laura Stricker, "Mining legacy proves difficult to erase," Sudbury Star, June 16, 2011. http://www.thesudburystar.com/2011/06/16/mining-legacy-proves-difficult-to-erase. See also: Bik Van der Pol, "Between a Rock and a Hard Place," in Sudbury: Life in a Northern Town, 45.

²¹ Cronon, Uncommon Ground, 36

²² Metzl and Kirkland eds., Against Health, 6

²³ Kenneth R. Olwig, "Reinventing Common Nature," in *Uncommon Ground*, ed. Cronon, 380.

²⁴ Cronon, Uncommon Ground, 52; emphasis added.



Fig.2.4 The Thin Green Line
Public contest submissions in celebration of 25 years of Land Restoration



Fig.2.5 Robert Gibb, The Thin Red Line, 1881.



Fig.2.6 West End Hilltop, July 2014
View of the Superstack and regreened slopes of the slag heap, and the active slag heaps in the background.

CHAPTER 2.2

Under Cover of Green

Commentaries that have challenged the nature-culture binary are finding increasing significance in contemporary environmental discourse. An evaluation of regreening and the implications of its ongoing application is not only necessary but critical as it relates to the driving environmental ideologies that have emerged across diverse disciplines. The nature-centered position – regreening – is conceived as the antidote to problematic anthropocentric praxis but ultimately only reverses the binary and gets stuck in the same rhetoric. Carolyn Merchant describes this process using the example of marginalized cultural narratives,

Privileging automatically creates a marginalized other.... one is central, the other excluded; one is higher, the other lower; one is true, the other false. The pairs can be reversed by raising the opposite. But in either case they are frozen in their new positions. There is no movement, process or free play across differences.²⁵

Rather than conceal or erase signs of industrial operation, stigmatized landscapes should be reoriented in a way which liberates their potential by dismantling the exclusionary spatial practices of an either/or attitude (land reclamation or industrial planning); to contemplate the possibility of a 'both/and also' logic (one that permits and encourages a creative combination) and thereby deals with the problem of extensive abandoned spaces.

The City of Greater Sudbury is emerging from a period of crisis-generated land reclamation to a period of land reclamation-generated crisis. The regreening initiative admittedly has much further to go, even still 'healing the landscape' in no way addresses all varieties of problems Sudbury is plagued with. Industrial activity is still ongoing, and abandoned and/or hazardous mine sites (rural brownfields)²⁶ are only just finding their way into current reclamation strategies. Additionally, a multitude of urban brownfield sites, aging infrastructure, disappearing heritage and below-average human health also affect the city, and the population still has no independent public accounting of the social costs of the mining industry.²⁷ David Leadbeater, editor of *Mining Town Crisis*, takes a particularly strong position stating Sudbury is in a chronic crisis; deeper and longer term than the usual boom-bust formula resource towns are subject to.²⁸ Eric Cazdyn, author of *The Already Dead*, identifies a condition that has arisen from the contemporary

²⁵ Carolyn Merchant, Reinventing Eden: The Fate of Nature in Western Culture, (New York: Routledge, 2003), 171.

²⁶ see: news article on Rural Brownfields

²⁷ David Leadbeater, Mining Town Crisis: Globalization, Labour and Resistance in Sudbury, (Halifax: Fernwood Pub., 2008), 21.

²⁸ Leadbeater, "Introduction," Mining Town Crisis, 11-48.

intersection of medicine, globalization, politics and culture and names it the 'new chronic'; an interesting view as it could relate to Sudbury's regenerative 'healing' image. Cazdyn explains,

A medical prescription is written in advance by a doctor as a way to treat a specific condition in the present. It is a written directive that responds to specific symptoms and whose main objective is to keep the symptom from accelerating into full-blown illness. In general, it is not programmatic, neither is it geared toward eradicating the cause of illness. Prescriptive medicine begins with the axiom of health management: as long as illness is managed in the meantime, we do not have to worry about curing for the future. The prescriptive meantime becomes the permanent destination rather than a temporary moment of development.²⁹

In Cazdyn's approach, there is an important distinction to be made regarding the idea of a 'cure' as it has been used thus far. Where I have equated regreening (as a restoration to health) to a fundamental desire to 'cure' the historic condition (and negative legacy), Cazdyn's theory relegates regreening to the prescriptive meantime. Regreening begins with the objective of healing the city's scars rather than deepening them, but deals with the easier to manage symptoms of a much more complicated and ongoing relationship between industry, community and environment. When speaking of nature as a moral imperative, William Cronon refers to Carolyn Merchant's study of Eden as a core myth in modern environmental thinking.

[Eden] is a place of absolute good and absolute evil, of actions that are unambiguously right and wrong. When we project its polarized, black-and-white myth onto the ambiguous world of gray on gray that we actually inhabit, the power of its imagery sparks our passions but darkens our vision. It buys clarity at the expense of understanding by tempting us to re-enact is most ancient stories rather than listen for whether there might be some other tale to tell.³⁰

The image of a beautiful and healthy city defuses any urgency towards underlying issues in a broader context and distracts from other important provocations (albeit not intentionally). Mitigating symptoms removes individuals from a position to participate in the larger issues that produce those symptoms.

Cited as a socio-economic benefit, Lautenbach et al. note, "It is now increasingly difficult to find completely barren landscapes within public view corridors." Recalling an earlier reference to Bradshaw (Chapter 1.3, page 49), early regreening made no secret of prioritizing aesthetics (and public perception). On restoring the visible environmental quality of the area, he underlined,

This could be done either by restoring the quality of the built environment or the quality of the natural environment. However, the former is unlikely to happen without a restored confidence in the area bringing in new capital. It is therefore restoration of the quality of the environment that is the key.³²

While the appearance of regreening (and of nature) represents an ethos Sudbury is proud to promote, it is a narrow interpretation of the city as a whole.³³ Strongly aligned with a single totalizing narrative, the city is deservedly celebrated for what is included in the narrative, but is also beholden to what is not. This is why any single image of the city is so critical. If regreening is upheld as a cure, or a recovery, or a "healing" of the landscape, it must be able to hold up against other stories and parts of the city, or risk falling apart in the face of challenge or contradiction. Ideologically, regreening perpetuates an ethos which either ignores or contradicts the intricate complexities of a city which is: renowned for both its industry and reclamation; a northern community also trying to be a southern city; and, is economically diverse and yet still dependent on industry.

²⁹ Eric M. Cazdyn, The Already Dead: The New Time of Politics, Culture, and Illness, (Durham: Duke UP, 2012), 22.

³⁰ Cronon, Uncommon Ground, 39

³¹ E. Lautenbach et al., "Municipal Land Restoration Program" in *Restoration and Recovery of an Industrial Region*, ed. M. Gunn, 118.

³² D. Bradshaw, "Goals of Restoration" in *Restoration and Recovery of an Industrial Region*, ed. M. Gunn, 105.

³³ Mike Whitehouse, "Accent: Inside-out city", Sudbury Star, Saturday, July 30, 2011. http://www.thesudburystar.com/2011/07/30/accent-inside-out-city

Sudbury no longer exists in any single time or place. It has one foot in the past and one in the present, one foot in the Canadian Shield and one in Toronto, one foot in the hinterland and one in the heartland.... Traditional local economies might falter, local psyches might be infiltrated and homogenized by larger ones, but the natural and built landscapes will always serve as a constant grounded reminder of where you are and why you are there, and thus provide the strength to move forward with confidence.³⁴

Any image of the city is just one representation of many, but if taken on as a broad picture of the city and it collapses, everything does. Nonetheless, narratives, anecdotes, accounts and the media have profoundly affected the transformation and evolution of the city and many argue that the future of the city will rely quite profoundly on whatever direction the next narrative iteration may take.³⁵

The symbolic landscape has been reclaimed to demonstrate a new idyllic historical narrative that erases signs of the old demoralizing one. A critical dialogue of land reclamation methods and the pervasive nature ideologies that drive them means establishing value in 'damaged' sites as a necessary part of an authentic landscape fabric. Imperatives of environmental activism must be to broaden fields of signification (socially, spatially and historically) so that the city can decisively posit possible futures of the Sudbury landscape fabric in the context of Canada's resource economy. "It is difficult to care about things we do not see, or that do not signify for us." We must engage with the landscape to perceive that beyond a Nature Ideology there is a more complex significance: to provoke as many questions as answers, encouraging response and dialogue and to engender a multitude of perspectives to be perceived diversely.

Nature will always be *contested terrain*. We will never stop arguing about its meanings, because it is the very ground on which our debates must occur.³⁷

³⁴ Mike Whitehouse, "Sudbury's sense of place will always be grounded in the Canadian Shield" in Globe and Mail, 9 Feb., 1994. A20.

³⁵ Refer back to Chapter 1.3, 52-53.

³⁶ Adam Dickinson, "The Astronauts," in *Regreen*, edited by Anand and Dickinson, 15.

³⁷ Cronon, Uncommon Ground, 52; emphasis changed.



Fig.2.7 Bay Street Overpass, Sudbury, April 2013
A view from the Bay St overpass towards a railway bridge over highway 17 demonstrating the clean straight lines blasted through the shield like naturally occurring concrete barriers.

CHAPTER 2.3

Representation - A Reduction by Nature

On the first page of Edward Soja's text, Thirdspace, he proclaims, "[W]e are, and always have been, intrinsically spatial beings, active participants in the social construction of our embracing spatialities."38 'Spatiality' was asserted by Lefebvre (in response to the historical tendency to over-privilege the study of societal relations on one hand and time on the other: Socio-Historical) to form and balance an 'ontological trialectic' (trialectic of being): 'sociality', 'spatiality' and 'historicality'. Soja presents the trialectic as "a statement of what the world must be like for us to have knowledge of it."39 In other words, our ideas about (and relationships with) ourselves, each other and the environment exist within (and as a result of) a context - a 'reservoir of knowledge'40 - which is socially, spatially and historically specific.

Sudbury embodies the tension between the conceptualization of landscape as an idealized object (natural) and as a tool of industry (unnatural). In the long term, restoration processes that conceive of nature as a blank slate cannot suffice to 're-mediate' (intervene between and reconcile two opposing forces; a play on remediation) landscapes that are the product of such long and complicated human interactions. More than simply a physical space (the focus of our instrumental use), landscape is also a signifying system through which 'context' is communicated, reproduced, experienced and explored. Therefore, making sense of the Sudbury context entails embracing the paradox that nature is both a social construction (subjective) and a reality that transcends social constructions (objective). Perhaps if greater consideration were given to the subjective (and thus more difficult to define) qualities of effected landscapes, reclamation might become less fixated on health and on totalizing discourse and instead embrace a spatial strategy of assemblage that acknowledges variations and contradictions in the landscape fabric.

Denis E. Cosgrove, a leading proponent of the 'new cultural geography', greatly contributed to the development of the humanities tradition (concerned with culture, identity and meaning) in geography. His work scrutinized the complex meanings of 'landscape' with particular attention to its pictorial and scenic aspects. According to Cosgrove,

...the idea of landscape came to denote the artistic and literary representation of the visible world,

³⁸ Soja, *Thirdspace*, 1. 39 Ibid, 70.

^{40 &}quot;Ecology: The Conversations", The Ecology of an Art Scene, Nov 9, 2013. http://iso.canadianart.ca/microsites/ paristoronto/events.php#part2

the scenery (literally that which is seen) which is viewed by a spectator. It implied a particular sensibility, a way of experiencing and expressing feelings towards the external world, natural and man-made, an articulation of a human relationship with it.4

Understanding the human dimension of landscape is fundamental, extending the role of representation (public image, branding and narrative) as it informs diversely motivated landscape practices that both impart being and are bestowed it. 'Landscape' applies to a physically delimited portion of earth's surface and denotes an objective and empirical method of analysis, but this conception presumes landscape is a static and determinate object of enquiry to the exclusion of subjectivity.⁴² Beyond the 'science' of reclamation there is a subjective meaning that cannot and should not be reduced to formal processes.⁴³

Landscape is anchored in human life, not something to look at but to live in, and to live in socially. Landscape is a unity of people and environment which opposes in its reality the false dichotomy of man and nature...44

A geographic area and its material appearance are constituted through social practice;⁴⁵ identity (individual and/or collective) is a performance of embodied acts, processes, movements and ideas. Therefore, landscape has both an objective and subjective dimension. It encompasses a vital duality that emphasizes both the physical effects and cultural significance accrued through lived experiences (engagement over time); and, the primarily visual and occasionally iconic.46

Kenneth R. Olwig notes "a certain circularity between the abstract, ideal nature of the land, its representation, and the shaping of the land." However, he adds that despite this circularity landscape "is greatly influenced by the way in which the land is represented."47 Representations are affective; producing but also produced by ideal conceptions of the landscape, and having an influence on the physical production of landscape. This affectivity is critical for Lefebvre who points out that representation is a concrete guideline for how 'thought' becomes 'action':

We may be sure that representations of space have a practical impact, by effective knowledge and ideology... Their intervention occurs by way of construction - in other words, by way of architecture, conceived of not as the building of a particular structure, palace or monument, but rather as a project embedded in a spatial context and a texture which call for 'representations' that will not vanish into the symbolic or imaginary realms.⁴⁸

Lefebvre's theory of spatiality (The Production of Space) consists of three principles or modes of production: 'spatial practice', 'representations of space' and 'representational spaces' (or spaces of representation). 'Spatial practice' (perceived/physical/real) is a space of relative objectivity. It is materialized and empirical space "directly sensible and open, within limits, to accurate measurement and description." (Representations of space' (conceived/mental/imagined) are the conceptualized spaces of scientists, planners, urbanists, and philosophers, "all of whom identify what is lived and what is perceived with what is conceived."50

⁴¹ Denis E. Cosgrove, Social Formation and Symbolic Landscape, (Madison, WI: University of Wisconsin, 1998), 9.

⁴² Ibid, 9, 16.

⁴³ Ibid, 17.

⁴⁴ Ibid, 288-9.

⁴⁵ Dennis E. Cosgrove. "Landscape and Landschaft" (lecture delivered at the "Spatial Turn in History" Symposium, German Historical Institute, Feb 19, 2004). GHI Bulletin No. 35. p58

^{46 &#}x27;schaft' (the Germanic root of 'scape') designates this important distinction to the definition of landscape. See: Cosgrove, Social Formation and Symbolic Landscape; Cosgrove, "Landscape and Landschaft"; and, Kenneth R. Olwig, "Representation and alienation in the political land-scape."

⁴⁷ Kenneth R. Olwig, "Representation and alienation in the political land-scape." In Cultural Geographies No.12. (2005), 19-40. http://www.ssoar.info/ssoar/bitstream/handle/document/23233/ssoar-cultgeo-2005-1-olwig-representation_and_ alienation in the odf?sequence=1, 21

⁴⁸ Lefebvre, Production of Space, 42.

⁴⁹ Soja, Thirdspace, 66.

⁵⁰ Lefebvre, Production of Space, 1-7, 38.

Representations are a way of thinking about space conceptualized physically via maps, drawings, and photographs (also the written language) that often dominate as they profoundly affect and control the way that we think about, analyse, explain, and even experience and act upon space.⁵¹ According to Lefebvre representations of space contain the history of ideologies and can be studied to examine the dominant ones. For Soja this space, which he gives the name *conceived space*, is

...tied to the relations of production and, especially, to the order or design that they impose. Such order is constituted via control over knowledge, signs, and codes: over the means of deciphering spatial practice and hence over the production of spatial knowledge.⁵²

In 2008, a map of Sudbury demonstrated the clear power of representation to create knowledge (designed to serve a particular interest). The map was created to depict, better than words ever could, exactly how immense an area Sudbury is.

One of the most enduring memories of John Rodriguez's mayoralty has to be his what-fits-into-Sudbury map. The map depicted Sudbury's boundaries with 14 southern Ontario communities wedged easily inside -- with room to spare. It was to scale and, to the degree that maps tell stories, it was a whopper.⁵³

The intention was to bolster the city's efforts to get its fair share of revenues from the province by demonstrating how much more it costs to operate a city so sparsely and unevenly populated. Cartography, like any representational form, belongs to the social world in which it is produced.

These first two kinds of space that Lefebvre postulates represent dual perspectives; an either/or mode of traditional thinking about space that has informed 'real' or 'imagined' spatial thinking and analysis. Demonstrating the dialectical relationship between them, Lefebvre defines the third and final, 'space of representation' (lived/social), as the space of human experience; how space is used (less formal and more local knowledge) and encountered directly "through its associated images and symbols and hence the space of 'inhabitants' and 'users'."54 Soja also crucially defines this space as both 'real and imagined'. Although (and both Lefebvre and Soja emphasize this point) social space is the outcome of all three practices, the third space demonstrates a critique of the representation of space by considering the possibilities of representational spaces: "lived space as a strategic location from which to encompass, understand, and potentially transform all spaces simultaneously."55 Soja describes Thirdspace as the point were everything comes together:

...subjectivity and objectivity, the abstract and the concrete, the real and the imagined, the knowable and the unimaginable, the repetitive and the differential, structure and agency, mind and body, consciousness and the unconscious, the disciplined and the transdisciplinary, everyday life and unending history.... For Lefebvre (and for Borges), spatial knowledge, as a means "to thread through the complexities of the modern world," is achievable through approximations, a constant search to move beyond (meta-) what is known.⁵⁶

Against homogeneity and suppressed differences, Lefebvre suggests that in accommodating diverse representational spaces a new 'differential' space emerges; one which could include both spaces of traditional reclamation and ecology and space of denudation and abandon.

Land is a register. As a deliberate creation, landscape acts as a mirror onto which encoded meanings and significances are projected; it is the richest historical record we possess. Lefebvre explains, "an already produced

⁵¹ Soja, Thirdspace.

⁵² Ibid, 67

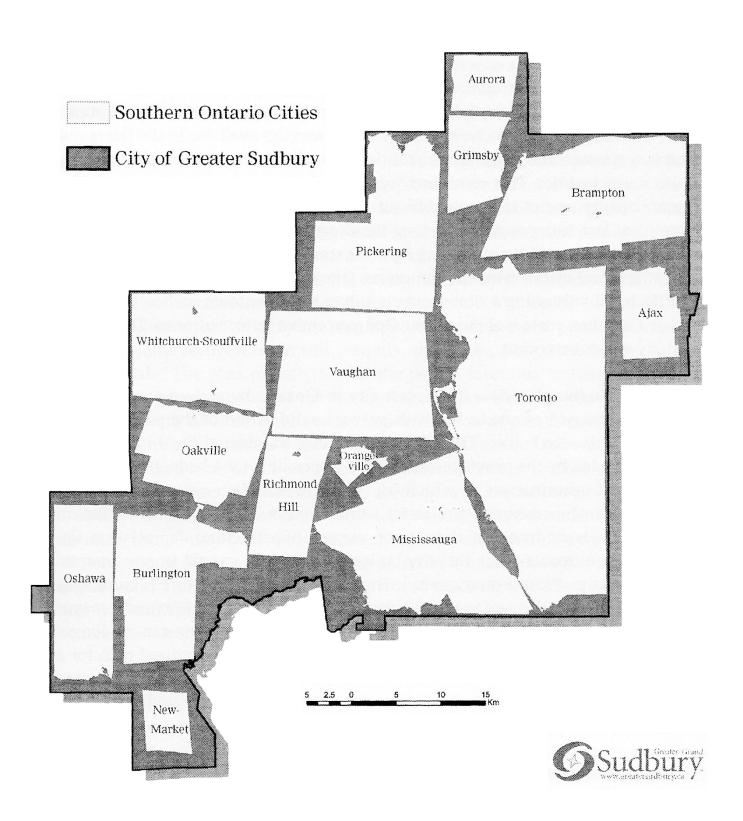
⁵³ Mike Whitehouse, "Inside-out city," *The Sudbury Star*, July 30, 2011. http://www.thesudburystar.com/2011/07/30/accent-inside-out-city

⁵⁴ Lefebvre, *The Production of Space*, 39

⁵⁵ Soja, Thirdspace, 68.

⁵⁶ Ibid, 56-57





space can be decoded, can be read. Such a space implies a process of signification."⁵⁷ Landscapes are autobiographical. Cultural landscapes are saturated with traces of historic events, the remains of past land use and the residue of former processes. In articulating his theory of 'ungrounding' (in *Political Plastic*) Eyal Weizman posits:

...the ground is a certain code, both at the operational and symbolic levels: the code of the city - its operational logic and its ideology is in the first fifteen centimetres... the relation between figure and ground, between the object and the surface on which it relies.⁵⁸

The surface reads as though it were an archive divulging stories about the people who dwell in that place; how they relate to the land and to each other. The inclination towards articulating a human relationship with the landscape was at first a sensibility limited to the form of an artistic (or literary) expression, but is increasingly physically involved in landscape through its perpetual reconstruction. Sustainability (a prime example) implies a certain sensibility; a way of expressing and provoking 'healthy' relationships between the external world (natural resources) and humans (wants and needs). The objective and subjective signs writ large across the landscape (and in representative material like the photographic book *Healing the Landscape*) are vital to setting Sudbury apart as a region genuinely dedicated to improving and establishing a healthy sense of place. Landscape in every sense of the term privileges vision. This sensibility is decidedly, according to Cosgrove, connected to a "dependency on the faculty of sight as the medium through which truth was to be attained: 'seeing is believing.'" 59

Theoretically, a physical landscape composed for its aesthetic content should be subject to the same discriminations of its representations; "Observed in this painterly way, landscapes could be beautiful, sublime, tame, monotonous, despoiled. They engaged a subjective response in those who observed or experienced them." Problematically, the space of imagination (more concerned with the cognitive, conceptual and symbolic worlds) tends towards an idealist emphasis. Beneath an ideological veil of apparent coherence and unity, the Sudbury landscape might (by physically re-greening) deceptively conceal the human struggles that went into its construction. In Cosgrove's words,

[Landscape] is an ideological concept. It represents a way in which certain classes of people have signified themselves and through which they have underlined and communicated their own social role and that of others with respect to external nature.⁶¹

Since representations are inherently social (and sometimes even ideological) they can create an unstable – if not problematic – relationship with the 'real' world that they claim to belong to. Representations of Sudbury, as the bases upon which people act, have become as important as any material reality; the public image (diffused and generally accepted) is as legitimate and consequential as the embracing spatialities it defines. The danger resides in the fact that the landscape, as a regulated space that perpetually re-configures physical, mental and social experience into narrative identities, is easily susceptible to simplistic or reductionist representations. Lefebvre states that reductionism "is how social space comes to be reduced to mental space" and succeeds in reducing contradictions "via the mediation of knowledge, and this by means of a strategy based on an admixture of science and ideology." In other words reductionist representations of the Sudbury landscape are akin to defining ecological practices that prioritize nature absent of culture.

⁵⁷ Lefebvre, *The Production of Space*, 16; emphasis added. Signification: the representation or conveying of meaning, make known or indicate

⁵⁸ Eyal Weizman, "Political Plastic," in *Collapse: Philosophical Research and Development*. Robin Mackay, ed., (Falmouth, U.K.: Urbanomic, 2010), 296. http://roundtable.kein.org/sites/newtable.kein.org/files/weizman_political%20plastic.pdf.

⁵⁹ Cosgrove, **Social Formation and Symbolic Landscape**, 9; emphasis added.

⁶⁰ Ibid, 17.

⁶¹ Ibid, 15.

⁶² Lefebvre, The Production of Space, 106.

The image of Sudbury is locked into a logic of opposition. Moonscape or healed, every critique of the city is partial (biased), and momentarily refers to the part of the city that is represented and not to the city as a whole: the influence of 'representations of space' **outweighing the lived**. "For Lefebvre, reductionism in all its forms…begins with the lure of binarism, the compacting of meaning into a closed either/or opposition between two terms, concepts, or elements." Ultimately, narrative affects the translation of knowledge about environmental degradation into action. Changes in consciousness can beget changes in the landscape and vice versa.

Reduction can reach very far indeed in its implications. It can 'descend' to the level of practice, for instance. Many people, members of a variety of groups and classes, suffer (albeit unevenly) the effects of a multiplicity of reductions bearing on their capacities, ideas, 'values' and, ultimately, on their possibilities, their space and their bodies.... Reductionism presses an exclusively analytic and non-critical knowledge, along with its attendant subdivisions and interpretations, into the service of power. As an ideology that does not speak its name, it successfully passes itself off as 'scientific' and this despite the fact that it rides roughshod over established knowledge on the one hand and denies the possibility of knowing on the other. This is the scientific ideology par excellence, for the reductionist attitude may be actualized merely by passing from method to dogma, and thence to a homogenizing practice camouflaged as science.⁶⁴

A nature ideology that overwrites or supersedes a multitude of other representations has a profound influence on the relationship between 'imagined' and 'real' spaces, facilitating but limiting the circularity that Olwig referred to, and constraining self-criticism and contradiction. Dissecting the term landscape renews the emphasis on dynamic relationships between space as an independent material 'in itself' (external) and its 'shape' (internal); all space is simultaneously external and internal. By stating 'all landscape is space' or 'everything is landscape' the prerogatives of conventional landscape reclamation fall away and expose a criticism of reclamation as a simple exercise in **spatiality**, without being hindered by the conventional delineations of built and non-built, natural and cultural (man-made).

Tracing the repercussions of representations of nature (regreening narrative and praxis) on spatiality opens up a larger set of consequences that do not operate only at the scale of spatiality, but of sociality and historicality. Appropriated from Lefebvre and Soja's trialectic of being (Sociality, Spatiality and Historicality) I have defined the three lenses: Social, Ecological and Historical. As approximate disciplines, these are: (1) Sociology (2) Ecology and (3) History. The key to analysing a nature ideology is the way in which it performs a reduction upon what I extrapolate to be the three defining characteristics of 'context': (1) ethos: the fundamental codes and norms of practices in the city (2) geography: the interactions between form and function (3) heritage: the framing of historical subjects and events through concepts, practices and values. These lenses are not intended as absolute terms so much as a set of relationships that 'contain each other'65 and correlate; revealing nature as 'dogma' and/or a 'homogenizing practice' in the Sudbury context. The "simultaneity and interwoven complexity of the social, the historical and the spatial, their inseparability and interdependence" is part of an analysis intended to dismantle any "totalizing discourses" and "master narratives" (about reclamation) that limit the scope of knowledge formation and perpetuate deep divisions (natural/cultural, healthy/sick, visible/invisible, and surface/depth, to name a few).

⁶³ Soja, Thirdspace, 60.

⁶⁴ Lefebvre, The Production of Space, 106 - 7.

⁶⁵ Soja, Thirdscape, 72.

⁶⁶ Ibid, 3



Fig.2.9 Elm Street, July 2014 Where Lasalle Boulevard merges onto Elm Street West

CHAPTER 2.4Contextual Triad

A nature ideology is, at its most simple, a comprehensive vision and set of ideas that perform a transformation upon the real needs, feelings and experiences of members of a community (neighbourhood, city, society) to ensure their satisfaction and accommodation within the existing social order. The fundamental significance of the portrayal of restored landscapes lies less so in their systematic representation (or misrepresentation) of the actual space (physically) than in the provision of metaphor and narrative that supports a mythic and imaginary lived space.

The great attraction of nature for those who wish to ground their moral vision in external reality is precisely its capacity to take disputed values and make them seem innate, essential, eternal, nonnegotiable. When we speak of 'the natural way of doing things', we implicitly suggest that there can be no other way, and that all alternatives... should have no claim on our sympathies.⁶⁷

Imagery of a healed landscape tends to omit certain objects and signs that are ambiguous (having more than one possible meaning) or inclusive (permitting alternate interpretations), as distractions from a coherent and consistent narrative. Photographs exclude all but what is specified, literally what it is possible to capture within the bounds of the camera frame. This is how the representation is set apart from the world that it presents.⁶⁸ Therefore, the epistemological significance of any established public image is its ability to manipulate our experience of the landscape (dictating how it feels, and ought to feel) and perpetuate the current order.

The inherent circularity of regreening (as a production of space) informs the way a community thinks and makes future choices about participation and civic identity tied to landscape. Any narrative entails an ethic, but a nature ideology imposes a reduction upon ethos, geography and heritage (a set of cultural principles and artefacts) producing a narrow form of moral conduct. We strive for an ideal method – to mitigate or eliminate a perceived evil – but instead manufacture the very process that allows us to 'cope' and to get past the more difficult to conceive of 'representations'. The ancient Greeks only had one word for "drug". Their word "pharmakon" is somewhat paradoxical, meaning both 'remedy' and 'poison'. Today we still refer to effective medicines as 'drugs'. Many medications, composed of toxic and unnatural substances, are intended to target and relieve one symptom but may have a number of side effects. Chemotherapy for instance, is an invasive and toxic treatment intended to eliminate cancer cells, but actually is unable to distinguish between sick and healthy tissue and has extensive side effects. Likewise, regreening is not completely one or the other, remedy or poison; a solution with unintended consequences.

Without a doubt regreening is responsible for the most pronounced improvement the city has undergone in its history, but as a result its very success has the potential to mitigate other provocations. However significant or insignificant, provocation is a fundamental agent of change, and what is at risk by perpetuating a process of regreening is a future of radical possibilities.

⁶⁷ Cronon, Uncommon Ground, 36.

⁶⁸ Olwig, "Representation and alienation in the political land-scape", 26.



2.4.1 SOCIALITY | SOCIOLOGY | ETHOS

Sociology is the study of human social behaviour. Constrained by a nature ideology society becomes resistant to change, and is discouraged from thinking outside or against the basic doctrines which govern the ideology. What it is possible to do, to say, or to think is mediated by the limiting factor of an underlying sentiment, that characterizes and informs the customs and practices of the society: an ethos.⁶⁹ Regreening has imposed a worldview; an autopilot that responds prescriptively (with representational convention) to affected landscapes. A desire for the environment to be healthy is a reflection of our own desire to be healthy.

We live in a state of pervasive anxiety. Every day, we are confronted with problems stemming from the energy crisis, the use of natural resources, pollution, decreasing bio-diversity, climate change, new epidemics, the harmful effects of industrial production processes and our consumerist lifestyles. We perceive our bodies as constantly at risk...of contamination and disease.⁷⁰

Increasingly conceived as a 'risk society', we are obsessed with knowing what can have an effect on our health and lives at all times, with gauging how dangerous something is and the actions that can be taken to protect ourselves. Anything that embodies or relates to the source of an anxiety – whether real or perceived – is stigmatized; found to have no value as but a symptom of an illness that needs to be eradicated, resolved, recovered, and cured.

Prior to regreening, risks were readily apparent in the effects evidenced in the city (an abstracted body). The devastation of vegetation, sulphuric odour in the air, pitted paint on unprotected vehicles and the staining of rock suggested the effects that might have been occurring within human bodies.

The fact that Inco compensates employees and residents of Copper Cliff and the West End of Sudbury for damage to the paint on their cars caused by smelter fallout, but not for damage to their lungs, illustrates the low attention given to health impacts of smelter operations.⁷¹

Problematically, many risks today are invisible, or even entirely imperceptible. In Sudbury, air monitoring stations and projects like the *Sudbury Soils Study* are undertaken to ensure that everyday dust does not in fact contain metal particulates, that the soils in which we plant crops are not contaminated by heavy metals, that the very air we breathe and water we drink are not laden with toxic particles.

The Sudbury Soils Study, considered the largest risk assessment ever conducted in Canada, was initiated

⁶⁹ Definition of Ethos, http://www.merriam-webster.com/dictionary/ethos

⁷⁰ Borasi and Zardini, Imperfect Health, 15

⁷¹ Evan Edinger, "Environmental Impacts of Nickel Mining" in Mining Town Crisis, ed. Leadbeater, 109.

in 2001 and spanned several years. Its findings were released to the public in 2008. The complete study comprises three volumes: Volume 1 – Background Study Organization and 2001 Soils Survey; Volume 2 – Human Health Risk Assessment (HHRA); and, Volume 3 – Ecological Risk Assessment (ERA). The fundamental purpose of the HHRA was to estimate whether people working, living or visiting a given location are being exposed to or will be exposed to (or will be exposed to) concentrations of chemicals that have the potential to result in adverse health effects.⁷² It did not address past conditions.⁷³ The conclusion regarded elevated heavy metal presence in the soil as "within acceptable range", but an informal poll online at *northernlife.ca* found that the community was generally discontent with the results; 68 percent of respondents were not assured by the results.⁷⁴

In barren and semi-barren areas significant metal content in the soil inhibits plant regrowth. Highly acidic soil (itself the result of industrial operation) was found to contribute to the absorption, by plant life, of metal particulates in the soil; stunting root growth and leading, ultimately, to the death of metal-intolerant plant species. The distribution of crushed limestone was found to ameliorate the detrimental effects of metal toxicity to the plant by reducing soil acidity and therefore the ability for metal uptake and accumulation in the plant; 'effectively' reducing the metal content by rendering it insoluble (binding metal particles, which cannot be degraded, to the soil). This way the plants can grow "as if the soil was normal." Where the vegetation, or lack thereof was once a rough indication of contamination, today that is not the case. There is also something to be said for the fact that, as Borasi and Zardini point out, "We can no longer immerse ourselves in 'nature,' as if it were itself a cure, if nature too can be defined as sick."

Conceived as a way to 'heal' the city, regreening is paradoxical. From one vantage point, it convincingly presents a healed or cured landscape regardless of ongoing risks (real hazards that still exist in the obscure and remote areas between constellated communities or health studies not undertaken). The physical appearance of a healed or cured landscape has a mitigative effect upon the 'critical mass' required to incite action and change, as public derision (and stereotyping) and the environmental movement did for Sudbury in the seventies. From the opposite perspective, having left no obvious perceptible signs of risk leads to distrust and doubt, even of scientifically determined 'acceptable' risk. Giovanna Borasi and Mirko Zardini emphasize this point: "An absolute confidence in the ability to provide perfect solutions can easily give way to its polar opposite: doubt, and the consequent emotions of anxiety and fear." Misgivings about who manages

⁷² Christopher Wren, Risk Assessment and Environmental Management, 16

Many complaints surrounding the validity of the study were generated by the fact that the study had decided to omit historical records of contamination. Many worry more about what the conditions were historically, when they were the worst, affecting the community's youth who are now in adulthood with families of their own; which is not to say they are disinterested in what the conditions of contamination are today. Industries are required to either remediate to comply with soil quality guidelines or to conduct a risk assessment. In my early research of the Sudbury Soils Study I suggested that formal documentation and analysis of historic emissions and their long term effects should be required. I hypothesized that a look at historic data would reveal that the period of the highest emissions aligns with the childhood of the baby boomer generation, a period when they would have been most susceptible to emissions. This population is also one that notably moved out of Sudbury for work after graduating from university, making it nearly impossible to adequately define the affects on that generation by only studying the current population of Sudbury. "The emissions of SO2 in the Sudbury area peaked around 1965 to 1970...[it] was equivalent to more than 4% of the global anthropogenic emission of SO2 and ranked Sudbury as the world's largest source of SO2 emission." Source: Bill Freedman, Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses, 35.

⁷⁴ Bill Bradley, "Digging through the Sudbury Soils Study," Northern Life, June 13, 2008. http://www.republicofmining.com/2008/06/13/digging-through-the-sudbury-soils-study-by-bill-bradley/

Aaron Pickard, "Regreening efforts taking root", Northern Life, Jan 21, 2012. Metal-contaminated soils are incredibly difficult to remediate. The complete removal of the contaminants generally requires soil excavation, landfilling or soil washing which are incredibly expensive. Phytoremediation is an emerging technology that has the benefit of being cost-effective, is less disruptive to the landscape and is done in situ. Certain plant species that are known as metal hyperaccumulators have the ability to extract the elements from the soil and store them in easily harvested plant stems, shoots and leaves. See more at: "Phytoremediation: Using Plants to Clean Up Soils", United States Department of Agriculture. http://www.ars.usda.gov/is/ar/archive/jun00/soil0600.htm

⁷⁶ Borasi and Zardini, Imperfect Health, 21

⁷⁷ Ibid, 17.

these definitions and how they are determined can distort their objectivity. Additionally, risk is not just an objective phenomenon; it is not always so easily defined in concrete terms. In some instances risk is defined by comparative analysis. There is almost always an aspect of risk that cannot be reduced to formal definition and identification.⁷⁸ As a result, the strategy for mitigating risk and managing a hazard becomes more difficult to 'pin down.' In this way, the denuded landscape has value as an immediate register of toxicity. Air monitoring stations record air pollution data and make it available online to the public, but their are no immediate visible cues at the stations themselves.⁷⁹ Where risk is readily visible, people are granted a degree of control and responsibility over their fears. The community is presented with a critical choice that has otherwise been made in areas where the regreened landscape is ostensibly the ideal. On the difficult and sometimes dangerous work of miners, local artist and architect Oryst Sawchuck says, "There's a sense of community because there's an understanding of the danger. It's just like going to war. You develop a sense of camaraderie."

These are the sociological limitations of medicalization (and 'nature'). Who is to say with confidence what an adequate or correct medicalized ethos for the city might be? In fact, should there be a 'demedicalization' of society, and what would a strategy like that look like?⁸¹ In any case, synonymous with popular perceptions of health, green is morally upheld while rock, stone, and slagheap become morally ambiguous, even inadmissible (not allowed or tolerated).

Reductionism ... is how the social space comes to be reduced to mental space by means of a 'scientific' procedure whose scientific status is really nothing but a veil for ideology. Reductionists are unstinting in their praise for basic scientific method, but they transform this method first into a mere posture and then, in the name of 'science' (epistemology), into a supposed absolute knowledge.⁸²

The current strategy is ecological.

⁷⁸ Cosgrove, Social Formation and Symbolic Landscape, 17.

⁷⁹ To view historic air pollution data see: Ministry of the Environment and Climate Change. http://www.airqualityontario.com/history/; and, http://www.airquality-sudbury-vale.com/environmental-activity/monitoring/index.asp

⁸⁰ Quoted in: Laura Stradiotto, "'Mining Heroes' inspire Sudbury artist", *The Sudbury Star*, June 21, 2014. http://www.thesudburystar.com/2014/06/21/mining-heroes-inspire-sudbury-artist

⁸¹ The term demedicalization comes from Borasi and Zardini eds., Imperfect Health, (2012)

⁸² Lefebvre, The Production of Space, 106.

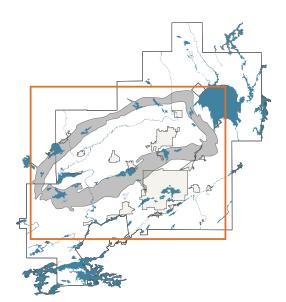


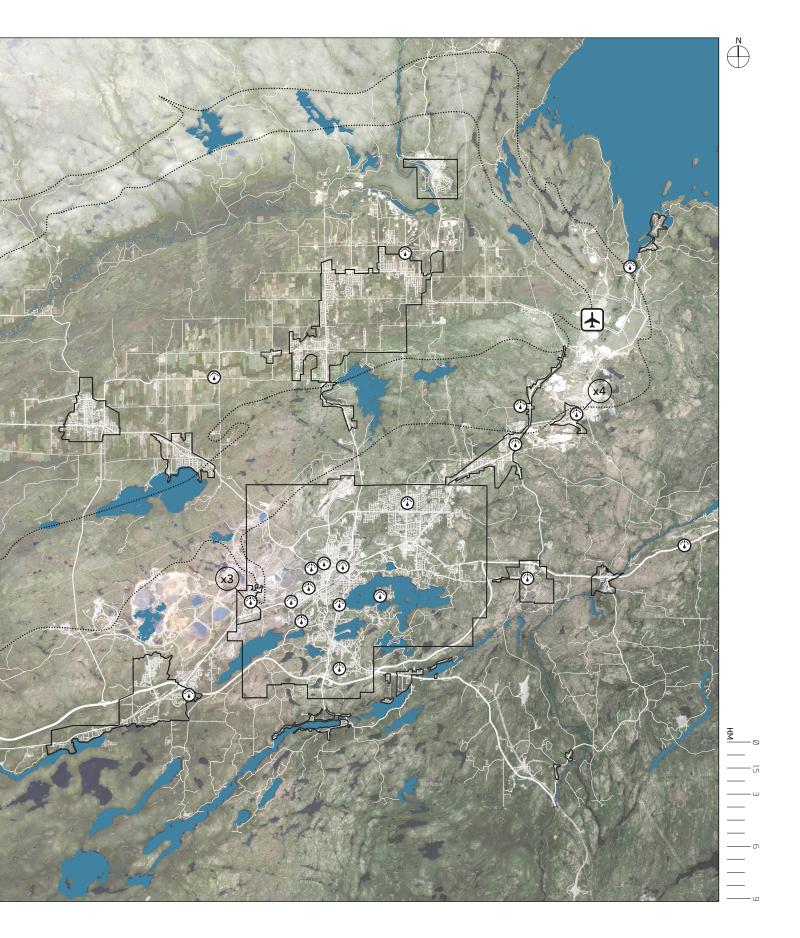
Fig.2.11 Air Monitoring Station Locations

Sudbury Igneous Complex (SIC)
District Boundary
Lakes

Airport

SO2/Particulate Monitoring Stations







2.4.2 SPATIALITY | ECOLOGY | GEOGRAPHY

Ecology began as a study of plant biotas. In early restoration efforts a number of species that were planted were not actually native to the region; such was the urgency with which regreening sought to re-vegetate the denuded landscape. The black locust (Robinia pseudoacacia), for instance, was used for its nitrogenfixing ability and tolerance in very dry and exposed sites. Recent goals apply broader ecological objectives including creating a landscape that more closely resembles the pre-mining forest ecology, and directing management to sustain forests consistent with what would establish under natural disturbance patterns. Although reclamation in Sudbury began with the simple notion of supporting vegetation, the process has become increasingly complex since. Vale biologist Gale Watson explained the transitions the program underwent at a Science Café in April 2013,

The main purpose was to try and detoxify the soil and get any sort of vegetation to grow. If one was starting today, so 35 years later when there's a lot more known in restoration ecology and restoration science we would go with just using native plants and native trees and local native species and we'd probably also be putting down certainly less fertilizer and certainly wouldn't be using the grass seed which has long been the sort of stage one of the program.

We know how to get the basic structure of forest but that is not the whole of the natural system out there, one needs all the animals the rest of the plants, we need all the creatures you find in the soils, we need the birds. We actually thought that by getting some plants onto the landscape—plants are the whole basis of a natural system or ecosystem—everything else would come. That hasn't been the case so far, and so we are moving now to do more complete restoration, for instance introducing species which you'd find on the forest floor, by introducing other material that may contain some of the soil animals, that kind of thing, so completely make a resilient kind of natural system out there so that if anything does happen to it it's not going to disappear completely.

Traditional regreening strategies of liming, seeding and tree planting are ongoing but ecology has expanded to include animals and organisms as an important component of plant communities. Ecology encompasses everything within the thin film of life covering the earth (known as the biosphere). Still, ecological practices in Sudbury are largely concerned with reproducing as close a likeness to the lost landscape and ecosystem as possible. The form of the landscape is where it does its ideologically significant work. Ecology is but one way in which we talk about form – actively shaping and shaped by function in nature.

⁸³ William E. Lautenbach et al., "Municipal Land Restoration Program: The Regreening Process" in *Restoration and Recovery of an Industrial Region*, ed. M. Gunn, 116.

⁸⁴ SARA Group, "Chapter 4: Regreening and the Changing Landscape", 39.

If ideology is what Mary Louise Pratt [] has termed "reductive normalizing", the attempt to make subjects and objects appear fixed, codified, reified, to make what is patently cultural appear as if it were natural, then landscape as an objectifier *par excellence* plays an important role in ideology.⁸⁵

It is incredibly unlikely that the region would have remained the same as it was had settlement and industry not occurred. Environmental discourse has already established that nature is never in static balance, readily transforming (with sometimes violent force and magnitude) without our influence. Still more, ecological science is recognizing that humans have had a significant impact on the earth's 'natural' processes for much longer than was ever previously imagined. In any case, whatever ecology (or ecological aesthetic) comes after industrial processes can never be more than a representation of what was here before. In addition, regreening has generally precluded any ecology that arises from the consequences of industrial practice. The high acidification of the soil in the region (that resulted from early smelting processes) actually created ideal conditions for the lowbush blueberry. An entire culture has grown around the presence of blueberries in the region. The Blueberry Hill Walking Loop in Minnow Lake meanders through some of the most popular picking patches in the city and The Blueberry Festival is a citywide event across a number of communities celebrating the resource and encouraging free picking from mid-July into late August. As it turns out, liming (intended to improve the conditions of the soil) actually destroys the 'poor' conditions that the blueberry bush relies on to thrive.

Different patterns of landscape exist at the same time. Longing for the loss of its dense forests of pine with which the region strongly identified, regreening quickly covered and overtook vast areas of rock that had been stripped bare. Interestingly, while efforts were being made to protect and recover the characteristic vegetation, rock blasting continued unhindered. "Sudbury's damaged landscape still possessed many of the characteristics of its original form." What was once a fundamentally biological study of form and function is expanding to encompass nature as both biotic and abiotic.

...recent insights about just how deeply the bio is intertwined with the geo make it necessary for any concept of 'the environment' to now acknowledge the roles and powers of the geologic in terrestrial life.... The sci-geo-bio 'order' that we live today draws all things on Earth – human and nonhuman – into relation at a much vaster breadth and depth than acknowledged by the environmentalism of the 1970s. Today, the geologic counts as 'the environment' and extends it out to the cosmos and down to the Earth's iron core. ⁹¹

Local characteristics unique to the northern landscape, most notably the geologic structure, are literally and figuratively eroding as they are replaced by interchangeable and prescriptive stereotypes. Rigid and hierarchical urban planning structures prefer 90-degree intersections and expansively flattened hilltops. Looking at an aerial image, the neighbourhood northeast of the historic downtown is organized into four perfect quadrants that center on an urban shopping mall (the second enclosed mall in Canada) and

⁸⁵ Mary Louise Pratt, "Scratches on the Face of the Country; or, What Mr. Barrow Saw in the Land of the Bushmen," in "Race," Writing, and Difference, ed. Henry Louis Gates, Jr. (Chicago: University of Chicago Press, 1986), 140. Cited in: James S. Duncan, The City as Text: The politics of landscape interpretation in the Kandyan Kingdom, 19

⁸⁶ Fred Pearce, "True Nature: Revising Ideas on What is Pristine and Wild", Yale Environment 360, Yale School of Forestry & Environmental Studies, May 13, 2013. http://e360.yale.edu/feature/true_nature_revising_ideas_on_what_is_pristine_and_wild/2649/>

⁸⁷ Ricardo Amils et al., ed., "7 Significances of Industrial Barrens" in Life in Extreme Environments, 88-89.

^{88 &}quot;Greater Sudbury Blueberry Festival," www.blueberryfestival.ca

⁸⁹ Living Landscape: A Biodiversity Action Plan for Greater Sudbury, Greater Sudbury, January 26, 2012), 21. http://issuu.com/sudbury/docs/biodiversity_print_final_feb_24_201. See also: Joseph D. Shorthouse and Giuseppe Bagatto, "Potential Role of Lowbush Blueberry (Vaccinium angustifolium) in Colonizing Metal-Contaminated Ecosystems" in Restoration and Recovery of an Industrial Region, ed. M. Gunn, 247-255.

⁹⁰ William Lautenbach et al. "Municipal Land Restoration Program: The Regreening Process" Restoration and Recovery of an Industrial Region, 110-1

⁹¹ Ellsworth and Kruse, eds., Making the Geologic Now, 24



Fig.2.13 Blueberry Hill Walking Loop, Minnow Lake, Sudbury

Trail (Natural & Paved) Trail Head Lookout

Picnic Area

 \overline{H}

civic centre. The entire development took on the name 'New Sudbury' after the New Sudbury Shopping Centre (constructed in 1957 by local developer Paul Desmarais)⁹². It is aptly named in contrast to the 'old' deteriorating and bifurcated historic downtown; at the time it was a more successful alternative to the difficulties of developing and reviving the downtown (moving the railyard was suggested but was considered unfeasible and not cost effective).

The terrain has literally been forced to conform to the ideas brought into it. The landscape is no longer something given, something with which the built has to reconcile; rather, it is something malleable, something to be shaped by the human imagination. Great effort seems to be put into creating the kind of suburban landscape that could be almost anywhere. The inconvenient rocky landscape is blasted into flat platforms for easy construction in an almost ceremonial erasure – a purging of the rough and difficult specificness of this place. ⁹³

With the technology and machines to blast (no longer limited to industrial processes), levelling rock to make way for new subdivisions and shopping plazas has become commonplace, "a case of local skills facilitating a normative vision of dwelling that is at odds with the facts of the ground and far from any contemporary vision of ecological harmony." Older neighbourhoods followed the contours, finding the easiest places to build tucked into the crevices between hills.

The construction of Copper Cliff, clearly having happened before the possibility of an infinitely malleable landscape, has adapted itself to the terrain. The builders of this unusual neighbourhood used the strange and uneven rock as part of their construction plans, finding the spaces where it made sense to build, figuring out how to work the uniqueness of each site to their advantage. 95

New hilltop developments began with the Moonglo subdivision in the early seventies. In recent years, the development of hilltops has been a focus of the city's Greenspace advisory panel. In a CBC Morning North interview, Erik White said,

Some believe that it's the hills of Sudbury that makes the city stand out, and they'd like to see more hills protected as parks rather than developed into homes with great views.⁹⁶

Despite the desire to preserve a number of hilltops across the city, as of yet there is no anti-development stance. Instead, the strategy seems to be to advocate for condo or row housing, apparently as a means to reduce the disruption of views caused by single-family homes like those atop Corsi Hill.⁹⁷ However, there are some who would rather encourage abandoned or derelict land in the city be recycled rather than touch the hilltops at all.

Nonetheless, against a background of newly established green, there is new support for an authentic regional identity, even if that may mean establishing connections to contested landforms. The notion of authenticity itself has become contested. Allegedly *denuded* landscapes still hold value as authentic places amidst interchangeable and generic (green) public space.

In this analysis, where it is impossible to define where society begins and nature ends, there can be nothing discernibly unnatural about Sudbury's historical foundation; "produced environments are specific historical

^{92 &}quot;No place to build a city", Sudbury: Life in a Northern Town, 67.

^{93 &}quot;Dear Sudbury, RE: Here, There, Anywhere?" in *Messages From Across Time and Space*, 2012. http://musagetes.ca/wp-content/uploads/2012/06/Sudbury_Letters_EN.pdf

⁹⁴ Kenneth Hayes, "Be Not Afraid of Greatness; or, Sudbury: A Cosmic Accident" in Sudbury: Life in a Northern Town, 23.

⁹⁵ DodoLab and Smudge studio, "Re: Here, there, anywhere?", Messages From Across Time and Space

⁹⁶ Erik White, Interview by Markus Schwabe, "Preserving Sudbury's Hilltops," CBC News Morning North, Jan. 6, 2014. http://www.cbc.ca/morningnorth/past-episodes/2014/01/06/preserving-sudburys-hilltops/. (accessed July 2014).

⁹⁷ Cairns Jr., "Research Topics in Restoration Ecology" in *Restoration and Recovery of an Industrial Region*, ed. M. Gunn, 170

results of socio-environmental processes."98

...the etymology of 'eco' is the Greek word oïkos, meaning 'home', so by extrapolation, ecological balance can be said to entail a delicate symbiosis between ourselves and our homely surroundings. It is impossible to conceive of the self outside of its natural habitat, and vice-versa. 99

Taken from Guattari, home must be the place for which we take responsibility and embrace all things, a continuum of natural and cultural landscapes, *without denigrating any single form*. Science in this respect is insufficient: the objectivity (and 'clinical' accuracy) of environmental science does not preclude or outweigh subjective analyses.

Morphological analysis, with its concentration on empirically defined forms and their integration, can operate only at a surface level of meaning... Below this lie deeper meanings which are culturally and historically specific and which do not necessarily have a direct empirical warranty. Formal morphology remains unconvincing as an account of landscape to the extent that it ignores such symbolic dimensions - the symbolic and cultural meaning invested in these forms by those who have produced and sustained them, and that communicated to those who come into contact with them...¹⁰⁰

Perhaps a new ecological paradigm might stimulate a dialogue between ecologists (scientists) and designers to fully realize a complex geography – in place of an attractive object – that dynamically addresses both good and bad processes via a renewed appreciation of historic value.

⁹⁸ Nik Heynen, Maria Kaika, Erik Swyngedouw. "1. Urban Political Ecology, Politicizing the production of urban natures" in *In the Nature of Cities*, (London: Routledge, 2006), 4.

⁹⁹ Georgiana Banita, "The Ecology of Love: Reading Annie Dillard With Felix Guattari", in An [Un]Likely Alliance, Herzogenrath, ed., 303.

¹⁰⁰ Cosgrove, Social Formation and Symbolic Landscape, 17-18



Fig.2.14 New Sudbury Shopping Centre, circa 1950s

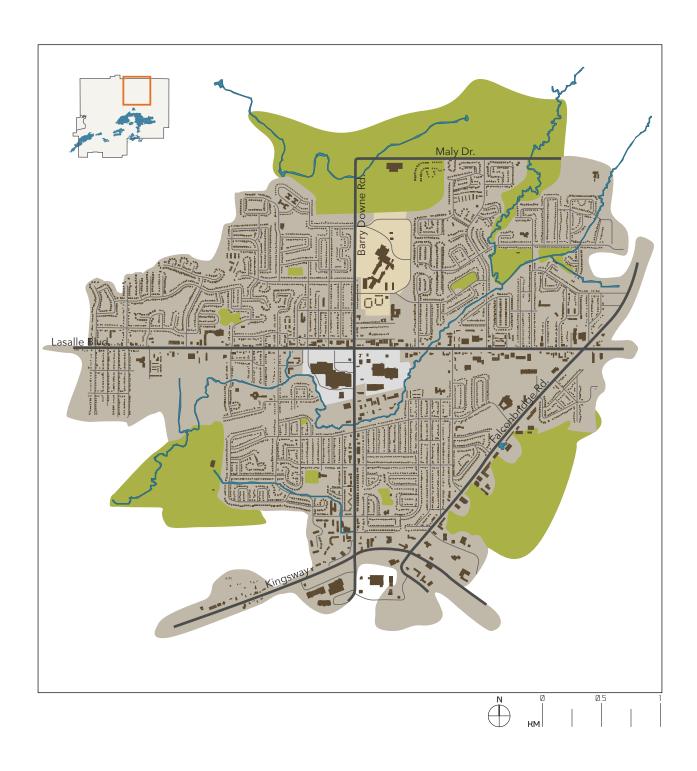


Fig.2.15 "New Sudbury"

New Sudbury Shopping Centre Cambrian College



Fig.2.16 Rock Cut, July 2013
New road construction near Totten Mine

Fig.2.17 (opposite) The Four Corners, Sudbury, July 2013 View of the Regent and Paris Street intersection from the parking lot of Southridge Mall



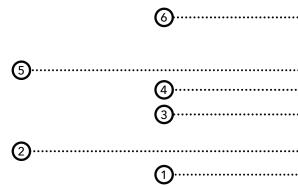
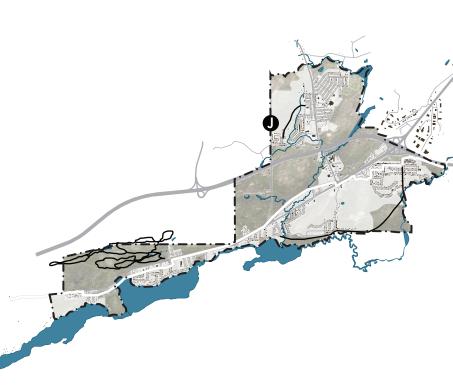


Fig.2.18 Map of Sudbury Hilltops

- City BoundariesCopper CliffLively-Mikkola-Naughton
 - Sudbury
- Water Bodies (Lakes, and man-made)
- Parks
- Trans-Canada Trail (Existing & Future)
- Trails
- Hilltops
 - 1 Corsi Hill
 - 2 Mickey Mouse Mountain
 - 3 Deadman's Canyon
 - 4 Christakos Mountain
 - 5 West End Hilltop
 - 6 Donovan Mountain
 - 7 Sunrise Ridge
 - 8 Ellis Reservoir
 - **9** Kingsway Ridge
 - 10 New Hilltop Park
 - 11 Silver Hills



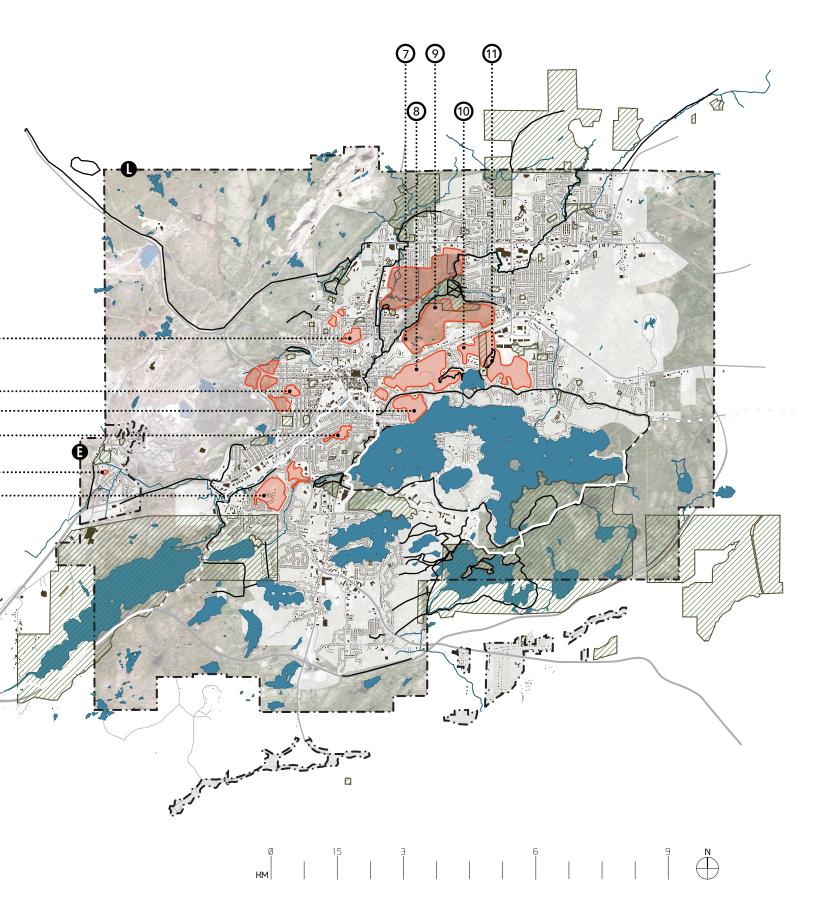


Fig.2.19 Sudbury Hilltops After a number of high-end subdivision developments boasting great views, like the afore mentioned and most notable Corsi Hill, there has been a push to protect more of Sudbury's hilltops. Developers are now encouraged to put up apartment or condo buildings to preserve views and trail networks.
Several of these hilltops have already been turned into natural parks by the Greenspace Advisory Panel. Naomi Grant, a member, said "Hilltops are like little islands of nature and parks that people can connect to." She and others, like those responsible for a "Save the Mountain" campaign, would like to see the city's privately owned peaks become public.



Mickey Mouse Mountain

The smallest of those hilltops named here, it gets its name for the graffiti that adorns its street side face. It is one of two publicly-owned hills in Copper Cliff that is to be declared parkland.



Deadman's Canyon

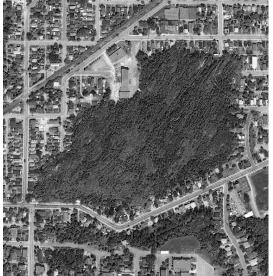
In the neighbourhood it often just goes by "The Mountain." Most of this hilltop was already owned by the city, but when St. Michael's School closed, the city acquired a portion of that land in a land swap with the school board. The property was recently declared parkland thanks to the efforts of the Greenspace Advisory Panel.



Christakos Mountain

Although this property overlooking Ramsey Lake has been an unofficial park to locals for decades, it is actually privately owned. In 2012, a plan by Dalron to build 300 homes on this hilltop was rejected by city council, but more recently has come before the Ontario Municipal Board.







West End Hilltop

This 7 hectares city-owned hilltop, hedged in by private residences, is now designated as a park.

Donovan Mountain

About a decade ago, this rocky hill was slated for a seniors housing complex, but the development was eventually turned down after a successful "Save the Mountain" campaign by the neighbourhood. It is now owned by Sudburybased 3 Seasons Investments, which has no immediate plans to build here.

Kingsway Ridge (top right portion)

Ownership of this hilltop is split between a dozen private owners who currently have no plans to develop it, however many suggest it would be an ideal spot for a hilltop trail and park.

AND

Sunrise Ridge (bottom left portion)

SalDan Developments is responsible for a hilltop subdivision of about 75 homes, with another 11 approved and likely to be built Summer 2014. The development, however, has been blamed for flooding neighbourhoods at its base, which is currently holding back plans for 66 more lots. Until the developer conducts a drainage study and shares costs of a flood wall and drainage canal with the city, these plans will not move forward.

Ellis Reservoir

City-owned, this hilltop was declared parkland in 2013, but 'no trespassing' signs are still posted at the access off Lonsdale Avenue. The iconic Sudbury water tower which was dismantled here in 2011, was replaced with a reservoir.

The water tower (constructed in 1946) that was removed from the site was first examined for cultural heritage value using nine criteria set out in the Ontario Heritage Act which also involved a survery of seven other Ontario municipalities with similar elevated water tanks.

"The intersection of Elm Street and Regent Street was the emergence of the city's first suburb. This is the most storied intersection in the city, and looking over this historic piece of land is the water tower." - Oryst Sawchuck quoted in: Arron Pickard, "Historian laments water tower demolition", Northern Life, Nov. 9, 2011.



Silver Hills

A 763-unit subdivision with apartment buildings and houses will develop on this hill, over the next 15 years. The new road to be named Silver Hills Drive will eventually complete a connection between the Kingsway and Bancroft Drive.

Towards the far left of this hill is also a **new hilltop park**. The 10.4 hectares of city-owned property was recently re-classified as natural park, thanks to the work of the Greenspace Adivsory Panel.

The **Blueberry Hill Hiking Trail** starts behind the Carmichael Arena and rises a gradual 46 metres to the top to provide a panoramic view of the city. It includes several lookouts and a gazebo.





2004 Google Earth

Fig.2.20 Corsi Hill Before and After

Satellite imagery identifies the natural edge of the outcrop that, in 2004, still defined the organic planning pattern around its base, and in 2012 what is left of it following a new development that partially flattened the top of the hill to accommodate the housing.



2012 Google Earth



2.4.3 Historicality | History | Heritage

The historic value of mine sites is generally contentious, although not unacknowledged. In the "1978 to 1984 Land Reclamation Report," William E. Lautenbach elaborated

This program also has a story about the need to conserve some areas where land reclamation should not occur in order that important gene pools of metal tolerant species can be preserved and individuals can view the degree of impact man has had on this environment.¹⁰¹

Taken to an extreme, Anthony D. Bradshaw began his contribution to the text *Restoration and Recovery of an Industrial Region*, with the following:

If we were to take a broad view of the world, there is no reason why the degradation of Sudbury could not be left as it is, as a monument to the destructive way in which resources were exploited in the past. ... To many visitors, the area is extraordinary and fascinating. At the same time, it is a sharp lesson for us all about the ease with which we can degrade our environment completely.

Who decides to what historic period we are meant to return to? Regreening has seen fit to recover, to the best of its ability, the vegetative conditions as they were right before mining; recalling the densely forested landscape that earned the area the name "Ste. Anne of the Pines." On the scale of geologic time, an insignificant 15,000 years ago, the landscape may have looked much the same as the industrial denuded one, violently scraped bare of all its soil by the movement of an enormous glacier. Instead, trees and vegetation obscure an increasing amount of the characteristic black rock – with the exception of its significant elevational changes. Ross concludes "A Legacy Lives On," in *Healing the Landscape*, with a hopeful remark, noting the youth of the region are unfamiliar with a Sudbury that looked different from what it is today. A student interviewed for the piece stated, "I think that as a Sudbury teenager you never really think about the fact that Sudbury once looked like the surface of the moon, free of trees, grass and basically all plant life." Trading in a rich, albeit traumatic history for an aesthetically driven one erases signs of struggle (and consequently victory) leaving ambivalent monuments to mark the past. Peter Zumthor once remarked, "to build a monument where every politician can put up his plaque or his wreath, is the first act of forgetfulness." Taken-for-granted, the

¹⁰¹ William E. Lautenbach ed. Land Reclamation Program 1978-1984, (Sudbury, Ont.,: VETAC, 1985), 49. http://www.greatersudbury.ca/living/environmental-initiatives/regreening-program/reportspublications/

¹⁰² Ross, Grandmaison and Johnston, Healing the Landscape, 90.

¹⁰³ Courtney Kaminski, Age 14, Sudbury, Ontario Canada in: *Healing the Landscape*, 2001.

¹⁰⁴ Nico Saleh, (Marco Masetti, translator.), "Multiplicity and Memory: Talking About Architecture with Peter Zumthor", Archdaily, Nov. 2, 2010. http://www.archdaily.com/85656/multiplicity-and-memory-talking-about-architecture-with-peter-zumthor/

history of a landscape's social construction is left unexamined, masking the ideological nature of its form and content; under extreme circumstances landscape can engender a sort of 'cultural amnesia.' Every society sets up images or narratives of the past; the crucial issue is how and why certain images are rejected.

Applying a broad stroke of green erodes a meaningful attachment to the landscape by undermining its unique character with a homogenous unitary field. Reclaimed landscapes are only partial truths, imposing cultural homogeneity on a heterogeneous community. In David Gissen's "A Theory of Pollution for Architecture", he begins with the claim that "we cannot deny that pollution should be maintained and potentially eliminated, but its maintenance need not lead to simplistic forms of cleaning, isolation or elimination as an aspect of the city's history." 105

Sudbury is often embroiled in contestation surrounding the preservation of its built heritage. In 2011, one of its two water towers, a 50-year-old landmark, was dismantled in a reverse construction process leaving a void in its place. Priestly Demolition of Aurora was contracted to demolish the tower for \$191,000, and reserved the right to sell the metal for scrap. The Pearl Street water tower is currently being used for bill board advertising, but redevelopment ideas are ongoing.

The loss of the Steelworkers' Hall to arson in September 2008 has left something of a void in the city's labour history, and the monumental Mine Mill Hall is for sale for the price of a modest house. Many citizens imagined that the Northern Breweries building would house the school of architecture, but it has recently been purchased by a bus company and its fate is unclear. Plans for a performing arts centre were made and rejected, meanwhile, the Grand Theatre, Sudbury's original vaudeville hall, remains underused. Notable buildings from the forties and fifties are routinely torn down while cultural groups aspire to build the Next Big Thing. Ambition and neglect often go hand in hand in Sudbury, evidence of the need for a coherent cultural policy. 108

With little effort or funding available to maintain built heritage, 109 it comes as no surprise that there has, as of yet, been no concerted effort to record or develop a heritage plan for the otherwise "invaluable" and damaged abandoned mine and town sites that punctuate the landscape on the periphery of the city's urban areas and in the discrete wilderness. Reportedly, Sawchuck has stated, "If the community spent a fraction of the resources on preserving its heritage as it does on regreening, we'd be richer for it." For the Sudbury Star, Stan Sudol recently wrote an article declaring his frustration with the lack of attention paid to Northern Ontario's 'colourful' mining history; "For crying out loud," he began "I continue to be astonished with our collective Canadian obsession over the Klondike Gold Rush while Northern Ontario's rich and vibrant mining history is completely ignored by the Toronto media establishment, especially the CBC." 111

Opportunities for the preservation of barren sites have been considered, but as of yet have not materialized in any concerted effort. One idea was to declare the O'Donnell roast yard a UNESCO world heritage site. In a CBC News Morning North Interview with Laurentian University Ecologist Peter Beckett, he expressed the significance of protecting the site as the only visible remains of a roast yard in North America. He believed,

To see how Sudbury has changed over the years.... You have to show both sites [before and after]

¹⁰⁵ David Gissen, "A Theory of Pollution for Architecture" in Imperfect Health, Borasi and Zardini, eds., 126.

¹⁰⁶ Yvon Theriault, "Water tower take-down like 'peeling a banana", CBC News, Nov. 30, 2011. http://www.cbc.ca/news/canada/sudbury/water-tower-take-down-like-peeling-a-banana-1.1122888

¹⁰⁷ For information on the Sudbury Water Tower Redevelopment Project visit: http://www.sudburywatertower.com

^{108 &}quot;Musagetes Sudbury Cafe: Program of Discussions", Sudbury: Life in a Northern Town, 68.

¹⁰⁹ There is at this time only one museum curator for all five of Sudbury's museums, and there is no acquisitions budget. Personal correspondence with retired museum curator Jim Fortin.

¹¹⁰ Mike Whitehouse, "Historic Building facing demolition", *The Sudbury Star*, Jan. 8, 2010. http://www.uer.ca/forum_showthread_archive.asp?fid=3&threadid=76079

¹¹¹ Stan Sudol, "Celebrating Northern Ontario's mining history", *The Sudbury Star*, May 30, 2014. http://www.thesudburystar.com/2014/05/30/accent-celebrating-northern-ontarios-mining-history



Fig.2.22 Yvon Theriault, Pine St. Water tower demolition, 2011

because you come to Sudbury now and only see it as it has been regreened; you have no idea where it's come from. So you've gotta have the something before to really convince people you really can do things, and now we have the after. Especially a newer generation of young children who have no idea of what it was like before. They need to be able to see what it was like and touch what it was like. 112

No further information on the idea (and whether or not an application to UNESCO was ever made) was ever made available to the public. Unfortunately, without any significant effort to draw attention to the site it is lost to public awareness; the site is not accessible to the public (on Vale property) and tours are not readily available (if at all).

Besides the loss of historically significant mine sites, many of these sites had associated mining camps that were lost when production ceased. Although some only consisted of a few cabins, shanties and boarding houses, others were larger villages and even boasted their own amenities. Started in 1885 (the oldest camp), Worthington – situated along the Sudbury to Sault St. Marie Highway – had private housing, a hotel, post office and school. In 1927 a cave-in (91 metres across and 14 metres deep) permanently collapsed the mine, forcing the abandonment of the town site by the company. When the highway was realigned to the south in the 1950s, what was left of the community completely vanished. In isolation, the only remaining evidence of the town's existence is a small lake at the site of the cave-in.¹¹³

Happy Valley likely has one of the most infamous histories. A fringe development, it was occupied by farmers, and miners who wanted to live outside the planned town site for Falconbridge operations. Unfortunately, it happened to be situated in the path of noxious gas spewed from the Falconbridge smelter, found hazardous to local residents. At first, compromises were made to operation to mitigate the pollution, but the company eventually opted to purchase the residential dwellings and pay for moving costs to facilitate emptying the community. At the time, one reporter stated that Happy Valley was "the first community to be wiped from the map of Canada to make way for continued air pollution." Now completely abandoned, the site is off limits to the public; the only evidence of its existence is the large steel fence that encloses the area, and a few marked graves.

There is a conflict between those who care for the conservation of the meaning of a given landscape – for its cultural heritage – and those who believe we are obligated to restore landscapes for their natural heritage. Each ethical position relies on different readings of the landscape that are bound to both the ethical relation to the landscape reflected therein and to notions of community identity and sense of place. Restorationists must learn to interpret the value of nature protection in terms of narrative complexity instead of abstract scientific arguments but still their argument for the natural world should be welcomed as a correction to anthropocentric traditions of a place.

In a fundamental shift towards understanding how human beings use and create their environments, historical geography can move past static reconstructions of landscape to envision and move towards a future unencumbered by distaste and fear of its own historical record.¹¹⁵

Bringing the argument full circle, on the role of memory, Barbara A. Misztal defers to Karl Deutsch's

¹¹² Peter Beckett, Interview by Erik White. "City of Sudbury wants polluted mining site remembered," CBC News Morning North. June 25, 2012. http://www.cbc.ca/player/Radio/Local+Shows/Ontario/Morning+North/ID/2249931323/?page=5

¹¹³ Saarinen, From Meteorite Impact to Constellation City, 123-124

¹¹⁴ John Deverell and the Latin American Working Group, Falconbridge: Portrait of the Canadian Mining Multinational (Toronto, ON: James Lorimer, 1975), 97. Cited in: Saarinen, From Meteorite Impact to Constellation City, 136.

¹¹⁵ Cosgrove, Social Formation and Symbolic Landscape, 4.

admonition;

...without memory...we will have no warnings about potential dangers to democratic structures and no opportunity to gain a richer awareness of the repertoire of possible remedies.¹¹⁶

Biologists start with an incomplete notion of an authentic landscape, which is necessarily devoid of the ugly or unfavourable truth of how it came to be denuded. On the other hand, certain preservational practices that maintain the past in an outdoor museum, inadvertently deify these damaging processes. The opposition between these two prevents a productive exchange of ideas about the landscape; the semantic potential of the landscape is reduced. This 'image' of the community erodes the capacity for a breadth of meaning, producing a sterile landscape, unable to invoke, inspire or even incite. Taking inspiration from Imperfect Health,

We might consider contemporary efforts to purify and eliminate pollution as a part erasure of the city's history.... In the face of pollution's political consequences, its endless presence and its historical components, we might develop an attitude that is more curatorial than curative.... A curatorial approach would entail understanding pollution as a physical thing; a historical material as much as a process, and something that requires from us as much as we need protection from it. 117

¹¹⁶ Barbara A. Misztal, Theories of Social Remembering, (Maidenhead, Berkshire, England: Open UP, 2003), 14.

¹¹⁷ Gissen, "A Theory of Pollution for Architecture", Imperfect Health, 126.



Fig.2.23 Cemetery, Happy Valley, Falconbridge, 1982

Fig.2.24 (opposite) Happy Valley newspaper clipping, Aug. 2, 1974

Photo caption reads: "Demolition Continues - One of the last remaining houses left standing in Happy Valley is shown standing behind the rubble of a neighbr's former home. Residents have received as average of \$14,025 for their properties which the province declared -- in an area unsuitable for residential use.



DEMOLITION CONTINUES -- One of the DEMOLITION CONTINUES - One of the last houses left standing in Happy Valley is shown standing behind the rubble of a neighbor's former home. Residents have received an average of \$14,825 for their properties which the province declared were situated in an area unsuitable for residential use

Formerly tightly-knit, Happy Valley now disappearing:

Last residents lament need to relocate homes

The first community is On-time resident. "We were al-that lick of water in the valley the valley for 15 or 26 years pollution bothered me or not terio doomed to extinction for what absence at the officer of H as responsible for the starse but eventually they il do some. The average settlement to all pollution is gradually the earth."

The first community is On-time resident. "We were al-that lick of water in the valley the valley for 15 or 26 years pollution bothered me or not term of the stars but eventually they il do some. The average settlement to all pollution is gradually the earth."

The first community is On-time resident. "We were al-that lick of water in the valley the valley for 15 or 26 years pollution bothered me or not term of the stars and the stars are also as a second of the stars are also as a

Sphriered boards, window frames end the steel skeleber of a set of childrens' swings sit in Happy Valley welling to be trucked away. Four or five houses still

The provincial government decided to demain h II a p p y Valley because of the unsultability of the immediate area for residential use."

The half - dozen people still thing in Happy Valley are un-happy about the destruction of their trace tightly kill community. The remaining resiand they ask not be Herstilled.

"They (the unedla) coverrepresented the voiley as if
it was eny kind of a deceraplace to live," says a long.

SMELTER-FIMES

Happy-Valley is in the path of winds carrying fallout from Falconbridge Nickel Com-pony's smellers a mile away, High ole pollution index readstand to abolter the last of lines of singled from a moviner the 23 families who were told placed on Happy Valley Indiant summer they had in more three years are have caused or have their houses caped, the company to cut backspro-

duction on several occasions. -The monitor was installed The morator was installed following complaints from a some valley residents and from environmentalists. Most of 40th people who sattled in the valley 25 or 30 years ago never complained about the air pollution because they accepted it so part of their
way of life. You learn to live with in-

dustry because when it's your-husband's livelihood you don't complain about it," said one resident.

The remaining residents say

regulation as is air polition.

Residents approached the former forms ip of Falconbridge council more than-fife record and making for water services but the township of theory and notedy is quite fered to buy but the residents, clear how to explain the norother than supply the ser-rices, Supplying the water tically simpossible wax practically simpossible since the pickel company ownvices in the townsite of Fal-Conbridge.

Home owners balked at the kownship's purchase offer, saying too little was offered. Residents of Happy Valley claim six pollution has subaided in the-peet two years; and that if a water main was provided, gardens and green-ery would flourish.

WANT PEOPLE OUT

"What the company wanted all-elong was to get the pro-ple out of the valley. The y-might not do anything with-

Most of the remaining residents believe politics is in-volved in their displacements. Ask for an expension on this

The last remaining Yes dents don't blame envoic for parts of the fown is as bod what's happening but they will was in Hoppy Valley. In the move into a w Falcoshridge Noted is conneighborhoods. (rhoules 1230,000 toward purelighborhoods.

says one home owner. "I'll nover have a property like.

A comition complaint is that-bitle worning of the govern-ment's decision was given the people of Happy Valley. "One dily someone came to the doly and hoosed us a

picce of paper saying the government had decided to buy any borne. I never had my say whether I senated to move or not or whether the

The average settlement wws \$14,625.

LIVE NEARBY

Merry of the familie dy moved out of the valley have remifined in Falcon-bridge or Nickel Centre, Some for parts of the town is as bad

> tributing \$230,000 toward pur-chase of the proportion. I he profince is adding \$130,000 to over denolities and other expenses. Sellements are being negotiated by the ur-ban renewal branch of the regional planning department. The last remaining resi-

dents are stepted of the media sent his pervayar of their cliustion since had publicity in the past has helped druste a poor impression of both the people and their homes, Some leel, from appealable were to low because of the publicity.



Fig.2.25 (opposite) Happy Valley panorama, 1982





Fig.2.26 Robinson Lake Trail, July 2013
View from the bridge over Lily Creek. Homes on Cranbrook Crescent back onto Lily Creek.

CHAPTER 2.5

Landscape Mediation

Making practical and theoretical sense of environmental degradation requires the continuous expansion of knowledge, a radical openness that enables us to see beyond what is presently known, to explore spaces that are both similar to and significantly different from the real and imagined spaces we readily recognize. In response to this complexity, we require a public space for a constellation city, a space in which contradictions and juxtapositions are visible and material in the very structure of the space itself. "Although the city offers us 'an illusionary and deceptive vision of the past'…" care in place of an ultimate cure may engage past experiences making them open and contestable, staging new meaningful experiences "to uncover the city's true memories." Taken from Neil Smith's foreword for In the Nature of Cities,

It broadly rejects the apocalyptic "death" of nature in recognition of the fact that, however perversely, societies make the natural environment they live in, to a lesser or greater degree... Nature is manifestly not dead but is incessantly reproduced—in ways we may detest or we may love. 118

Nature is not static, so what would a nature for today look like; one that does not preclude damage or man's continued influence? A theory of landscape *mediation* must explore the role of difference – of hybridity and heterogeneity (juxtaposition) – to enable capacities for critique of the current constitutive order. Legibility and confrontation with the negative patterns and forms of the city are a necessary part of provocation, towards producing new knowledge and thus an affirmative public engagement.

Landscape mediation requires a mode of knowledge formation and of action that does not limit what can be seen; not to diminish regreening but to provoke creative (re)constitutions that are not 'conclusions' or 'beginnings' but are part of a sequence of variations in space. Aimed at redirecting existing views, patterns and orientations, the mediation of damaged and reclaimed sites open 'new' dialogues (broadening of knowledge – what it is possible to say and to show) that reveal the essential geometries which already exist in the city; mediating the divisive spatialities that reduced the field of possibilities to either a natural or cultural priority. For Soja this entails a strategy of "thirding-as-Othering," which,

Open[s] up our spatial imaginaries to ways of thinking and acting politically that respond to all binarisms, to any attempt to confine thought and political action to only two alternatives, by interjecting an-Other set of choices... [T]he original binary choice is not dismissed entirely but is subjected to a creative process of restructuring that draws selectively and strategically from the two

¹¹⁸ Neil Smith, Foreword, In the Nature of Cities, Heynen, Kaika and Swyngedouw, eds., xv.

opposing categories to open new alternatives. 119

The important part to take away from a strategy of 'thirding' is that it is always open to interpretation, always flexible, and radically open. It is grounded in an important consideration: a conclusion is never final but actually a starting point for further exploration.

Due to its constellated structure - which differs from more conventionally structured cities - Sudbury is difficult to comprehend. While restoration has by many metrics improved the city, it has also created areas of illegibility. Legibility requires the probability of being seen, presented sharply and intensely to the senses (well formed, distinct and even remarkable), inviting attention and participation; 120 the act of changing what can be seen becomes a radical act. A descriptive approach to landscape and ecology, reasserts the direct (lived) experience; a space for community to gather and re-examine its most constitutive truths; and an open text unencumbered by the reductive labels, icons, symbolisms or displays of any single narrative and/ or representation.121

Sudbury is not ugly, as the old 'moonscape' slur has it, nor is it beautiful, as its boosters claim, pointing to the city's many lakes. At once awesome and terrible, harsh and majestic, Sudbury lies beyond the register of ugly and beautiful. The place can only be described as sublime, for Sudbury is a phenomenon as much as it is a city. 122

¹¹⁹ Soja, Thirdspace, 5.

¹²⁰ Kevin Lynch, *The Image of the City*, (Cambridge, MA: MIT, 1960). 121 Paul Basu, "Museum, Landscape and the Storytelling Space Between" in *Landscape & Arts No. 34/35* - Autumn/Winter $2005, 2-6. \ http://www.ucl.ac.uk/archaeology/people/staff/basu/usercontent_profile/basu_museum_landscape.pdf$

¹²² Hayes, "Be Not Afraid of Greatness or Sudbury: A Cosmic Accident" in Sudbury: Life in a Northern Town, 16.

CURATE

Variably Constituted & Continuously Reconstituted

CURE VS. CARE | Chapter 3.1

CONSTITUENTS OF A CONSTELLATED STRUCTURE | Chapter 3.2







Fig.3.1 (previous) Sudbury to Copper Cliif panoramic view, May 2, 2013

Fig.3.2 Big Nickel, Sudbury, April 2013
July 22, 2014 marked the 50th birthday for the Sudbury icon. In celebration, the city created the world's largest coin mosaic, with upwards of 100 volunteers working 5 hours a day for several days to place 220,000 coins to break the previous Guiness Record holder.

CHAPTER 3.1 Cure vs. Care

Five decades after the Big Nickel rose into the city's skyline, the five-cent piece remains a much-loved Sudbury icon. But if the city wants to continue to attract investment and development, Glenn Miller thinks it might be time to change up the symbolism to something a little more contemporary. "Wouldn't you rather see a picture of a fabulous downtown park or something?" said Miller, vice president of education and research at the Canadian Urban Institute. "It's time to change the postcard."

- Lindsay Kelly, "Sudbury among successes in study of downtowns", Northern Life, 3 July, 2014; emphasis added.

The characterization of Sudbury has a profound impact on the formation of local identities but it also informs how visitors are meant to experience, understand and imagine the unique northern environment. Increasingly, these identities are conceived of as a tourist-marketing device for economic diversification. Cities everywhere paint broad strokes, looking for clear 'identifiers' that embody and convey the prevalent pleasures, ambitions and accomplishments of their region; devices which can skip over the less easily defined (even mapped) histories and forms of the city.

In Sudbury one such device is the epithet 'a city of lakes'. The city contains more than any other in Canada, 330 over 10 hectares in size, and some 10,000 residents live on them (roughly 6% of the Greater Sudbury population).¹ Constructed water bodies are no less significant in the region. Tailings ponds are usually easier to differentiate from natural water bodies than man-made lakes and flooded mine openings, although they are generally less visible to the public eye. The flooded Clarabelle No. 2 Open Pit (AMIS No. 05322) is actually marked with a plaque off the side of the highway, an exceptional case marked only because of its unique historic significance as the Murray Mine Discovery Site. There are a total of 22 square kilometres of tailings areas at the Vale repository at Copper Cliff, representing 10 percent of all tailings stored in the country and the largest single repository in Canada.² Mathetmatically, that would be equivalent to just a small fraction, 3.5%, of the city's 'water' surface area. Imagined another way, if a lake constitues a body of water as small as 10 ha that would equal 220 lakes each 10 ha in size.³ Saarinen notes "there is little appreciation of the geographic extent and environmental impact of the tailing ponds that exist in the Sudbury area."

In conversation with a Mine Hazards Technical Specialist with the Sudbury Abandoned Mines Rehabilitation Program, I was told that mapping the polygons of these features is still at least a year

¹ http://www3.laurentian.ca/livingwithlakes/community/

² Saarinen, From Meteorite Impact to Constellation City, 267.

³ According the City of Greater Sudbury "Lake Facts", 16.5% (or 601 square kilometres of the city's total surface area is water). Assuming that this value does not include the 22 square kilometres that represent the tailings area (601 plus 22), the tailings area would represent 22 divided by 623. See: http://www.greatersudbury.ca/living/lakes-facts/

⁴ Saarinen, From Meteorite Impact to Constellation City, 266.

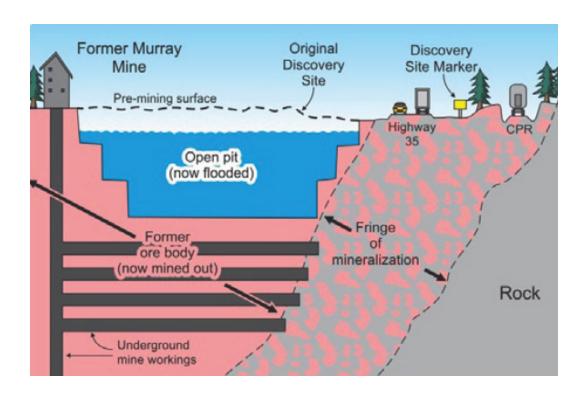


Fig.3.3 Geological relationships between Murray Mine, its orebody and the Discovery Site

Fig.3.4 (opposite) Clarabelle No. 2 Open Pit, Murray Mine, July 2014

AMIS No. 05322 - Class Type B (305m wide by 488 m long and 137m deep). Off Regional Road 35.



off.⁵ Conservatively, it would likely be at least another year before the information was publicly accessible. Despite their relative scale, physically and abstractly, these features do not typically factor into Sudbury's characterization.

In the small publication *Sudbury: Life in a Northern Town*, a selection of Mariana Lafrance's photographs depicting the downtown and older neighbourhoods focus on 'signs of decay' and 'discarded items' as evidence of pervasive decline and neglect of the city's built heritage; "the deplorable condition of which is routinely overlooked by the city's boosters." A larger selection of the photographs were published by Éditions Prise de Parole in 2008 under the title *Site Unseen* (*La Ville invisible*). Aesthetics are thus bound up in a battle over the image of society; what it is *permissible* (or acceptable) *to say* and *to show* in the current social order.

Sudbury should be revered as a place where one can access both pristine rivers, lakes, forests and parks, as well as areas that reveal the power and force of man. We cannot survive without using the earth, and thus will always have an impact on it.⁷

What if there was a place in the city for these contrary conditions to be readily apparent and well considered?

Today, the image of restoration contributes to the perception that we are well on our way towards an eventual cure in the industrial interim; holding out for the end of damaging industrial processes. Inevitably imperfect, it is implausible and impractical to hold out faith that we can recreate nature without consequence, especially when our very conception of nature is constantly evolving. Landscape itself is infinitely malleable. When most everything today can be perceived as altered and unnatural, polluted and unhealthy, restoration is a form of 'damage control' that manages a satisfactorily beautiful and green environment. Nature that was once venerated for its curative qualities (a refuge from the city) today can itself be categorized as unhealthy.⁸ Health though, is more complex than chemical reactions and physical symptoms. In such an incredibly and thoroughly altered landscape a conception of well being insinuates *care* in place of an ultimate *cure*.

Green is the color of a new harmony....projects that celebrate this vision describe fluid environments devoid of conflict—places where architecture, landscapes, and users integrate effortlessly. This quest for harmony unthinkingly displaces the positive values that arise from the basics of the contemporary city: conflict, excessive variety, irregularity, intricacy, and extraordinariness.⁹

Design disciplines truly contribute to our general well being when they provide multiple meanings and uses within a single project. The world is constituted by appearances and the way we organize them: a process of signification. By our senses we have the capacity to be affected, by our understanding we categorize these affects and by reason our understandings engage one another. The possibility for a transformation upon the present experience of the landscape therefore lies in the deconstruction and reconstitution of its appearances via curation.

From the Latin *curare* (meaning to take care), curate (noun) entered English in the mid-14th century in reference to clergyman, and later in the 16th century, as the assistant to a parish priest (Church of England

⁵ The inventory of abandoned mine sites and features is based on point data that was started in the early 90s, and is not reliably accurate. Today, GPS and satellite information can define point data within a 5M accuracy. A second phase for AMIS will include an interactive system that includes digitized maps of underground workings, engineering drawings and technical reports. Marc J. Stewart, pers. Comm. 20 Feb., 2014.

⁶ Shawn Van Sluys, Kenneth Hayes and Jocelyn Laurence, eds., *Sudbury, Life in a Northern Town*, (Musagetes and Laurentian Architecture, 2011), 82.

⁷ Dick DeStefano, Republic of Mining, 2013. http://www.republicofmining.com/2013/07/01/sudbury-dumped-on-the-slagheap-of-history-stan-sudol-originally-published-in-the-sudbury-star-february-6-2004/

⁸ Borasi and Zardini, "Demedicalize Architecture", Imperfect Health, 21.

⁹ Mirko Zardini, "Landform + Politics", in Landform Building, edited by Stan Allen and Marc McQuade, (Baden, Switzerland:Lars Müller, 2011), 61.

¹⁰ Borasi and Zardini, "Demedicalize Architecture", Imperfect Health, 30.

or the Roman Catholic Church in Ireland).¹¹ According to the Oxford English Dictionary it derives from the Medieval Latin word *curatus*, an adjective meaning "of, belonging to, or having a cure or charge". This person was authorized to conduct religious worship as a member of the clergy and as a spiritual leader (i.e. instructing of sacraments), but would also visit parishioner's homes when they were ill.¹² Their primary purpose was to assist in achieving a sense of wholeness. In this sense cure does not simply mean 'to make well' or 'to restore to health' as in the physical body, but is intended to recognize all dimensions of life: spiritual, mental, physical and social. Essentially, the 'cure of souls' brings people together to encourage and equip them through learning and sharing with and *caring* for one another.

By the 17th century 'curator' took on a more secular meaning from the Latin *curator* or *curatorem*, meaning overseer, guardian or agent. Likewise it referred to: a manager or steward, an officer of a university or a person in charge of a museum, art gallery, library or other such institution. This last meaning gave rise to the verb curate, "to act as curator of (a museum, exhibits, etc), to look after and preserve"; a shift in its meaning from caring for bodies or subjects to caring for objects and data.

A curator of the arts is 'keeper of a cultural heritage'. Their task, of curating, is a process of identification and organization with the intention of generating and disseminating knowledge. The curatorial department of an art museum is often also responsible for the care (conditions for maintenance and protection) of the individual artworks themselves. Simply, curating is composed of four actions: to preserve, to select, to connect and to display. Most importantly, the curator's function is to add value by forging relationships, and successful curation makes products (and collections) available for discovery and re-use. Still, similar to its religious (spiritual) connotation the main purpose of curation is to reveal, undoing ignorance or indifference: essentially a way to see. This etymology reveals the curatorial to be an activity concerned with both the physical and metaphysical. While the act of curation designates empirical meaning and importance, its semantic scope (especially at different points in history) indicates an inclination more towards the imperative to 'care' than to 'cure'; as in to nurture and cultivate rather than to remedy or alleviate.

Curate simply means applying selectivity to a large number of possibilities to create a reduced number for other peoples' consumption. Consider for a moment the potential of that 'reduced number'. Curation configures content to state something about the content as a whole – which by extension reflects back upon each individual component – but variations on the combination and configuration can state something entirely different. The act of selecting and assembling actually creates some 'thing' which is entirely new and more than just the sum of its parts.

Selection, presentation, and conversation are ways for human beings to create and exchange real value, without dependence on older, unsustainable processes. Curating can take the lead in pointing us towards this crucial importance of choosing.¹⁶

This process is fundamentally what is intended by a 'critical thirding-as-othering', a strategy which Soja extends from Lefebvre's *The Production of Space*.

¹¹ http://dictionary.reference.com/browse/curate

¹² Robert L. O'Block, The 7 Steps to the Cure of Souls, (Springfield, Missouri: The Society for The Cure of Souls, 2005).

¹³ Oxford English Dictionary

¹⁴ Ekow Eshun, "Way of Curating by Hans Ulrich Obrist, book review: Entertaining explanantion of why curating is vital part of the arts today", The Independent, March 14, 2014. http://www.independent.co.uk/arts-entertainment/books/reviews/ways-of-curating-by-hans-ulrich-obrist-book-review-entertaining-explanation-of-why-curating-is-vital-part-of-the-arts-today-9189753.html

¹⁵ Hans Ulrich Obrist, Interview by Stuart Jeffries and Nancy Groves, "Hans Ulrich Obrist: the art of curation", *The Guardian*, March 23, 2014. http://www.theguardian.com/artanddesign/2014/mar/23/hans-ulrich-obrist-art-curator

¹⁶ Hans Ulrich Obrist, "To Curate", Edge, 2011. http://edge.org/response-detail/10227

Lefebvre's spatial triad established 'perceived space' as concrete material conditions, and 'conceived space' as the imaginary to arrive at the third dimension, 'lived space', where the real and imaginary come together through social relation and direct experience in everyday life. From his attempt to bridge divisions in the meaning of space (between spatial theory and practice, the mental and social, and, the philosophical and reality), Soja determines that the fundamental device at work in Lefebvre's theory revolves around the third space. 'Thirdspace' is a space which is both the 'either' and 'or' but in the creative combination is also more than the simple sum of parts, "both similar and strikingly different." Therefore, the imposition of a binary is rejected by constructing a multiplicity of alternatives from the deconstruction of the either/or choice; "a critical 'other-than' choice that speaks and critiques through its otherness." In response to the mutual exclusivity between nature and culture, rather than identify some definitive third thing, curation intercedes as a device for 'othering'; producing new knowledge and new mediations which are neither natural or cultural but both-and-also some other thing.

Obrist cautions that one of the more important things he has learned as a professional curator is that their role is explicitly that of an 'enabler', careful not to subordinate the effect of individual artefacts to a single vision. For landscape, Orbist's warning is even more important. Unlike the artefact, which is not subject to direct manipulation, landscape's malleability makes it significantly more susceptible to any vision for it. A strategy of landscape curation aims to animate and activate each, the social, the geographical and the historical, by mediating their associated binaries: (1) socially - local and non-local audiences, experts and non-experts; (2) geographically - urban and rural, restored and damaged, built and not-built; and (3) historically - natural heritage and cultural institutions. Perpetually reconstituting an ethos, geography and heritage to overcome prescribed narratives. In *The Ecology of an Art Scene* lecture series, "Conversation Three: Innovation: Curating Contexts" examined contemporary art as a mechanism for opening an 'exploratory public forum' where, "Curators are creating projects not as site-specific adornments or displays of local discoveries, but to activate contexts and subsequently to change how we think about them."

It is difficult to conceive of allowances for untreated sites within a program conceived to treat and mitigate those very same landscapes. Forms of the city that do not directly reinforce the image of a city committed to healing are peripheralized; sites like the Coniston barrens (ground zero of regreening) are insufficiently engaged as legible forms of the city. Around 600 hectares surrounding Alice and Baby Lakes (just behind the decommissioned Coniston smelter) are identified in the city reclamation plan as an 'industrial reserve'. Although it is widely acknowledged that sites like this one are profoundly important, their value is generally as a measure of just how *green* treated sites have become. Ward 12 Councillor Joscelyn Landry-Altmann argues that Sudbury needs to be honest about the past and the origin of its scars. Her view is that honesty "legitimizes what has been accomplished and strengthens claims we are responsible stewards of our landscape now. And it would add buoyancy to future successes. It's about contrast, she argues. One extreme accentuating the other." Generally, these sites are not readily accessible to the public, apart from those with a keen interest or for academic 'scientific sightseeing. Leveraging abandoned or degraded sites in contradistinction to reclaimed sites – as not reclaimed – squanders their potential to dismantle the current exclusionary spatial

¹⁷ Soja, Thirdspace, 61.

¹⁸ Ibid.

¹⁹ Hans Ulrich Obrist, Interview by Stuart Jeffries and Nancy Groves, "Hans Ulrich Obrist: the art of curation", *The Guardian*, March 23, 2014. http://www.theguardian.com/artanddesign/2014/mar/23/hans-ulrich-obrist-art-curator

^{20 &}quot;Ecology: The Conversations", Ecology of an Art Scene, Nov. 9, 2013. http://iso.canadianart.ca/microsites/paristoronto/events.php#part2

²¹ Mike Whitehouse, "Inside-out city", Sudbury Star, July 30, 2011. http://www.thesudburystar.com/2011/07/30/accent-inside-out-city

²² Ricardo Amils et al., eds., Life in Extreme Environments, 250



Fig.3.5 Barrens near Coniston, 2005
Over 35 years after the Coniston smelter shut down

practices of an either/or attitude; land reclamation or industrial planning. Reintegrated into the fabric of the city, these sites engage the general public in ways otherwise impossible amidst a singularly 'natural' public image. Ultimately, for Coniston the potential is almost already lost:

Fortunately or unfortunately, the intention to preserve the extreme level of landscape damage nearly failed: due to natural recovery following pollution decline some 35 years ago the non-reclaimed area is now difficult to distinguish from reclaimed territories.²³

Elaborating on and extending curation opens up the possibility for damaged sites to become an integral part of a method of landscape *mediation*; to generate a new language (representational vocabulary) and move the emphasis from one that is predominantly technical, to one in which the aesthetic, function and value of landscape become integrated. "It is difficult to care about things we do not see, or that do not signify for us. Clearly, one of the imperatives of environmental activism must be to broaden fields of signification."²⁴ The sign becomes meaningful by opening a field of possibilities. Landscape curation aims to broaden the fields of signification, and by extension to broaden what it is possible to say, to hear, to see and to do in landscape as an 'arena of speculation'.²⁵

The curating of pollution does not compel architects to collect it into museum-like spaces, but rather to treat pollution as an object of care that cannot be wished away. It also demands that pollution be given a reasonable public, visual presence, and a historical framework within which to interpret it.²⁶

The principles of contamination (states of disorder) resurface amid principles of nature preservation (seemingly ordered states) as mediation between nature and culture (forms of meaning) in the social, geographical and historical. The ability to readily perceive the past is intimately connected to an ability to conceive of the future, only on the basis that community comes to terms with itself; acknowledging the welcome as well as the undesirable and the offensive as much as the satisfying. The international organization Musagetes was drawn to Sudbury for this 'tension between beauty and ugliness', interested in communities where it believes that the arts can become more central and meaningful in peoples lives, communities, and societies.²⁷ In *Sudbury: Life in a Northern Town*, the executive director of the organization made the following statement about their intentions:

Musagetes was founded on the principle that art can liberate in times of malaise and at moments of transition. It believes that there is a greater need than ever for the joy, the delight, the surprise and the power of the arts to radically transform society. By disrupting the predictable, the artistic process can be a powerful transformative agent, one capable of freeing us from the excesses of rationality, order and instrumental reasoning.²⁸

Invoking the tension between the overt divide between good and bad can give pause to usual reasoning

²³ Ricardo Amils et al., eds., Life in Extreme Environments, [88-89] 250-251. Original source: Keith Winterhalder and John M. Gunn, pers. comm.)

²⁴ Adam Dickinson, "The Astronauts", Regreen: New Canadian Ecological Poetry, 15; emphasis added.

An arena of speculation is a term from literature on the transformation of Israeli structures of domination. In the study of the potential application of physical interventions to open up a horizon for ongoing processes of transformation, and 'arena of speculation' is an architectural tool that incorporates varied cultural and political perspectives through the participation of a multiplicity of individuals and organizations. Eyal Weizman, Sandi Hilal and Alessandro Petti have an architectural studio in Bethlehem that employs a range of techniques, using architecture as an 'arena of speculation' to deal with how Israeli settlements and military bases could be reused, recycled and re-inhabited by Palestinians. See: Hilal, Petti and Weizman, "The Future Archaeology of Israel's Colonization". http://www.roulottemagazine.com/2011/04/decolonizing-architecture-sandi-hilal-alessandro-petti-eyal-weizman/

²⁶ Gissen, "A Theory of Pollution for Architecture", in Imperfect Health, 126

²⁷ Learn more about the organization at musagetes.ca

²⁸ Shawn Van Sluys, "Preface" in Sudbury Life in a Northern Town, 10.

during which the surprising and revelatory may enter the human mind.²⁹ Hans Ulrich Obrist, co-director of the Serpentine gallery in London, has a particularly passionate view on curation; for him it is,

to refuse static arrangements and permanent alignments and instead to enable conversations and relations. Generating these kinds of links is an essential part of what it means to curate, as is disseminating new knowledge, new thinking, and new artworks in a way that can seed future cross-disciplinary inspirations.³⁰

Landscape Curate: to *care* for all forms of landscape in infinite complexity such that there are no static circuitries; to place an emphasis on the means – the problem of knowledge – rather than the end – a solution (finite and determinate); to create new encounters, new responses and new environments as complex as the community they engage; to enable the social, spatial and historical.

²⁹ In his landmark treatise on aesthetics, A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful (1757), Edmund Burke defined the sublime as "whatever is fitted in any sort to excite the ideas of pain and danger... whatever is in any sort terrible, or is conversant about terrible objects, or operates in a manner analogous to terror", but nonetheless contains an inherent 'pleasure'.

³⁰ Hans Ulrich Obrist, "To Curate", Edge, 2011. http://edge.org/response-detail/10227



Fig.3.6 Sand Pit Lake, April 2013
View from a large paved pullout along Big Nickel Mine Drive. Access to the site and to the slag heap beyond are blocked by a fence that runs nearly the entire length of the heap.

CHAPTER 3.2

Constituents of a Constellated Structure

Looking down on Greater Sudbury, there is no beginning and no end...nothing to explain or mark its borders. Only the scarred remains of industry to make sense of it. Greater Sudbury is a green sea dotted with islands of towns, neighbourhoods, institutions and industrial complexes whose strengths, weaknesses and sometimes tenuous links are keys to Sudbury's identity and future...

- Mike Whitehouse, "Inside-out city", Sudbury Star, July 30, 2011

...the city is not spatially governed so much by its structures and buildings but rather by the way it organizes and divides the surface. This is why it is essential to seek transformation not only in the buildings but rather in the ground itself...

- Eyal Weizman, Political Plastic, 298

In very early mine right acquisition, when the country was trying to populate the north, to stake a claim you only had to possess the ability to walk onto the land and wield a pick and shovel; wooden posts marked off the claimed land and indicated the intention to possess it for industrial means. In 1892 the province passed The Ontario Mining Act (under jurisdiction of the Ministry of Northern Development and Mines (MNDM) since 1985), which enshrined the right of 'free entry'; prioritizing mining over other land uses and giving prospectors access to most of Ontario's landmass without consulting property owners or the public.1 A prospector's license is obtained for just 25 dollars (and imposes no limit on staking claims) in addition to a nominal claims registration fee and performing a minimum of 400 dollars in assessment work annually.² Over 5.4 million hectares of Ontario land are currently under active mining claims (an area larger than P.E.I.), which means if minerals of economic value are found they could be developed regardless of private ownerships, First Nation or Metis claims or other land uses incompatible with mining.³ Mistakenly most believe that purchasing a property makes it entirely theirs; sometimes the property owner only owns 'surface' rights, while the underlying geology or 'mineral' rights are owned by the province. In 2001 a prospector staked a claim on a cottage property near Kingston. Owner Marilyn Crawford admitted that she had been lucky when the claim was ultimately abandoned; "It was unfathomable to me that someone could just walk onto private property and stake a claim, much less come in with heavy equipment to explore for minerals with only 24 hours' notice to the property owner."5 In 2011, the Ontario government introduced (a much-criticised) 'paper staking' that allows companies and prospectors to go on to a computer and stake the claim they are interested in.

Mine closure policies were put in place to protect communities and the environment by holding industries accountable for their properties after mining operations have ended, but ultimately removes responsibility or accountability from the communities that are so closely affected by these sites. Of the 323 abandoned mine sites in Sudbury, at least 10 (which vary in size between 150 and 600 acres) are not

Conor Mihell, Mine Fields, 19. http://www.ontarionature.org/protect/PDFs/Mining_A08.pdf

² Rike Burkhardt, Peter Rosenbluth and Julee Boan, Mining in Ontario: A deeper look, (Toronto, Ont.: Ontario Nature), 20.

Ibid.

⁴ Conor Mihell, Mine Fields, 19, 23.

⁵ Ibid, 21.

currently managed under a closure plan.⁶ Any given one is estimated to require anywhere between \$100,000 and \$6,000,000 to rehabilitate.⁷ These are addressed as non-urban brownfields in the region's planning literature.⁸ The vast majority of AMIS sites are located outside the urban settlement area (90 percent of these are designated Mining/Mineral Reserve, Aggregate Reserve and Rural area in the Official Plan).⁹ It is this interstitial space which constitutes the largest portion of Greater Sudbury's geographical area and it is this negative space that gives form to the positive. Whitehouse explains,

Look down on most Ontario cities and you'll see patterns emerge. Confined urban matrixes with patches of remnant forest and wetlands inside. From above, these cities define themselves. They have beginnings and ends. Greater Sudbury is the opposite. It is nothing more than patches of development cut out of the endless Boreal forest, arbitrarily confined to borders that climb like a staircase to the northeast. It's like taking any other city and turning it inside-out, and wondering why it doesn't look right.¹⁰

Of the general public only those who are curious or adventurous enough will venture of their own accord into the discrete and disconnected spaces of the city; to hunt, to pick blueberries or to discover and explore abandoned places. Otherwise these places are beyond public sight, as in not perceived by the public, and site, as in outside the ownership of the crown or beyond the aid of community initiative.

The simple act of walking is a form of occupation; engaging and experiencing place not just by moving through it but by actively taking part and contributing to its dynamics. Lefebvre referred to this as Rhythmanalysis: the interrelation of social and spatial rhythms (time) in the experience of 'lived' life. The movement of the body actually negotiates the material affects of its surroundings, prompting a range of bodily gestures ('muscular consciousness')¹¹ that affect and reinvent the rhythm of the walk. The firm, sureness of a step takes on a different rhythm if required to tackle moving through a landscape of obstacles or hazards. Therefore the act of walking, (lived) is a way of interrelating the perceptible characteristics of the space, to the conception of it.

Walking – as a way of knowing, feeling, understanding and connecting to a given landscape – becomes a means of reclamation, not in its conventional usage (as in the recovery or restoration of land) but as an action of protest, from the meaning "to get back (something that was lost or taken away)." The public walking trail operates in the same spirit of 'free entry' and mine staking to turn the industrial activity on itself.

As a curatorial device, the design of a trail would physically establish – or re-establish in some cases – connections to these sites (abandoned mine sites in the interstitial space between constellated communities) and facilitate engagements with them. Interactions in everyday activity renew relationships with these landscapes by returning them to community vision and action as part of the social, spatial and historical

⁶ Greater Sudbury Brownfield Strategy and Community Improvement Plan, 45. http://www.greatersudbury.ca/linkservid/BC874905-FD36-3989-E4A00284073C255B/showMeta/0/

⁷ Jason Ferrigan, "Greater Sudbury plans for some old abandoned mines," CBC News Morning North, Jun. 11, 2013. http://www.cbc.ca/player/Radio/Local+Shows/Ontario/Morning+North/ID/2390711087/?page=34

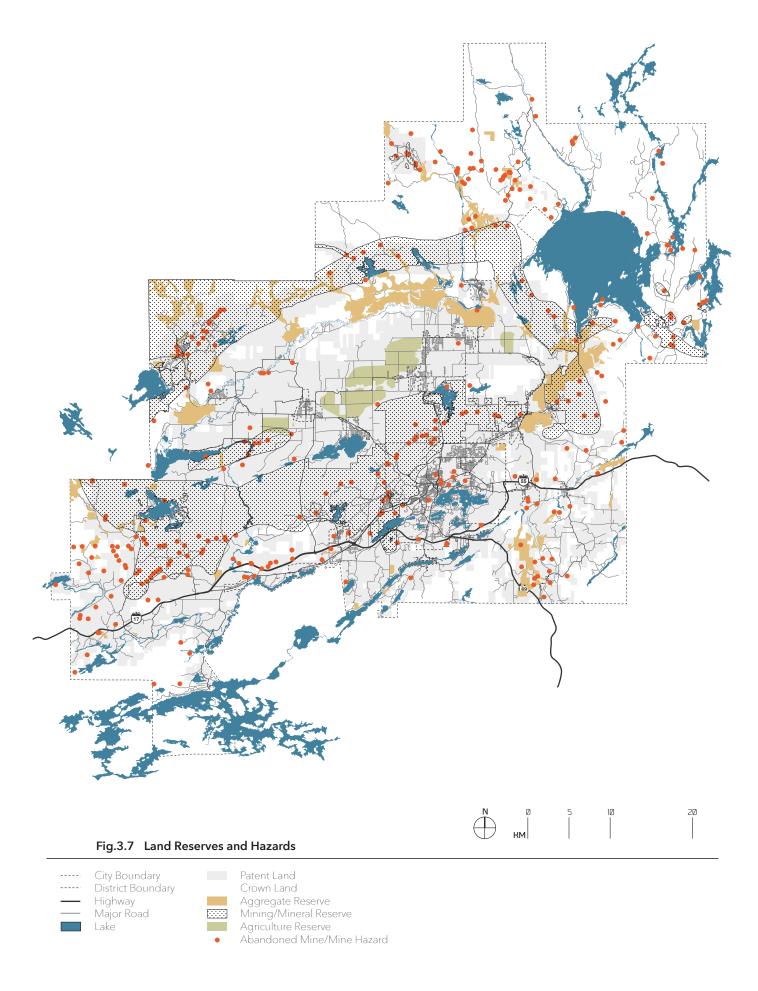
^{8 &}quot;5. Starting to Address our Non-Urban Brownfields" in Greater Sudbury Brownfield Strategy and Community Improvement Plan, 43-50.

⁹ Greater Sudbury Brownfield Strategy and Community Improvement Plan, 43. http://www.greatersudbury.ca/linkservid/ BC874905-FD36-3989-E4A00284073C255B/showMeta/0/

¹⁰ Mike Whitehouse, "Inside-Out City", The Sudbury Star, July 30, 2011. https://www.google.ca/search?q=mike+white house+inside+out+city&ie=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a&channel=sb&gfe_rd=cr&ei=CF3UU9hU4svyB9iqgYAP

¹¹ Gaston Bachelard, *The Poetics of Space: The Classic Look at How We Experience Intimate Places*, (Boston, Massachusetts: Beacon Press, 1994), 11. http://monoskop.org/images/1/18/Bachelard_Gaston_The_Poetics_of_Space_1994.pdf

¹² http://www.merriam-webster.com/dictionary/reclaim



context of the city; as a means to reclaim a sense of ownership.

In negotiating different patterns of landscape, enabling tensions between competing forms (and the processes by which they are derived: regreening and mining), the walking trail reveals an otherwise indefinable dynamic. Fundamentally, the walking trail is intended to increase legibility in the otherwise illegible spaces of the city by establishing a mode of perception (walking), and increasing what is perceptible (the trail itself). Embracing the connection between seeing/looking and acting, the reconfiguration of the constituent parts of Sudbury's constellated structure (what is visible, what signifies), is a catalyst for challenging the accepted modes of action (the usual rules and conventions of regreening).

Although it is controversial to create public spaces in the midst of fear of pollution and contamination that exists today, acknowledging these features addresses the value in these sites as realities of an industrial community. Subject to internal and intuitive 'affective' responses, these features – onto which we apply our emotions, values and instincts – reinforce an authentic image of the city. In this way these places which are conventionally invaluable or 'bad' become affirmations of community and provocation for sustainability that are not trapped by conventions of the natural world (which generally preclude and/or exclude man's physical impact on the world).

The design aims to be substantive. Starting from the historical context, the critique of regreening is fully realized when embodied in a project that addresses a real need within the city; a need for an accessible and well connected heritage framework and institution. The current city archive is the inspiration for both a walking trail (landscape archive) and new centralized, and accessible archive sited in Sudbury's most significant and iconic man-made landscape: The slag heap.

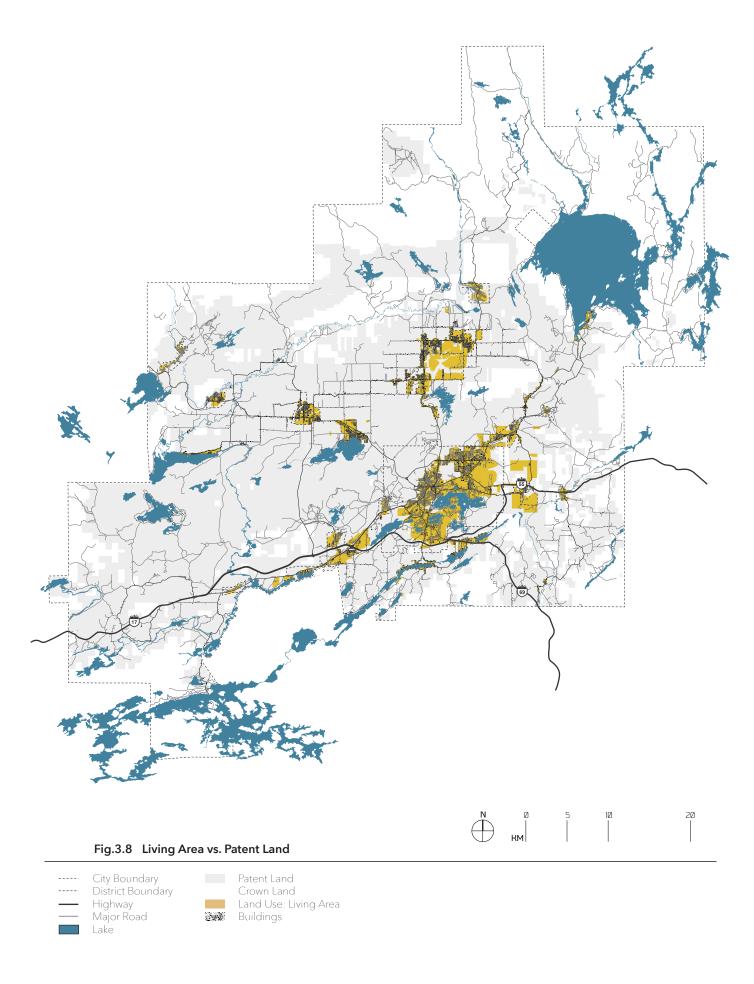




Fig.3.9 (opposite) Greater Sudbury Archive, Falconbridge, July 2013 View from Edison Road

3.2.1 Moving Outside the Archive

The Archives, located in the Thomas Edison Building (Former Xstrata Nickel offices), Falconbridge, serve the entire population of the City of Greater Sudbury. A professional archivist, Shanna Fraser, was hired in 2008, and the building officially opened to the public – by appointment only – in early May 2012. According to the Greater Sudbury website, the archive is intended to acquire, preserve and provide access to records of enduring value as evidence of the activities of the City of Greater Sudbury and its predecessors.

At the time that the building opened to the public, Ward 7 Councillor Dave Kilgour said there was a significant amount of work to do to fully develop Sudbury's archival collection. Suggesting that the next four years in particular would be a period of physical modifications to the building, and expanding the collection. While leading tours at the time, Fraser reportedly said that much of the archive still needed to be processed.¹³ Dieter Buse, chair of the Sudbury District Archives Interest Group said "Now we have a building, now we have some staff, Madame mayor, councillors, we need more staff. We need a user-friendly collection of archives."¹⁴

In April 2013, I made a visit to the archive to see the building for myself, noting the difficulties that stand in the way of processing and making the collections readily available. With a limited staff and resources, the archive has much further to go before the vision that Buse and the Interest Group have might be realized. Processing the incredible wealth of records is nearly an insurmountable task, with staff generally limited to the primary archivist and volunteer students. Further complicating the task, Canadian copyright law made changes in June 2012 to the status of "owner", regarding engravings, photographs or portraits. "Owner" originally was any person who ordered the work (once payment was made), but now (unless subject to a contract that states otherwise) the owner of the photograph is its original author. This means that Vale and Xstrata (formerly Vale and INCO) are no longer authorized to give copyright consent for photographic documentation that they have donated to the archive. Ownership of that material is given back to the hired photographer for example. In addition, copyright lasts for the life of the author plus 50 years, which means where an author has not already given consent, rights to the work cannot be transferred until the required time has passed. As a result, despite the volume of resources that exist, many (if not most) are not readily available for display or otherwise.

¹³ Darren MacDonald, "History retold through archives", Northern Life, May 3, 2012. http://www.northernlife.ca/news/localNews/2012/05/04-archive-opening-sudbury.aspx

¹⁴ Ibid.

The city's museums also suffer from limited resources, sharing one museum curator (based at Anderson Farm in Lively) across four locations (Anderson Farm, Copper Cliff, Flour Mill, and Rayside-Balfour). Since March 2013, the Tourist Welcome Centre has been closed due to changes in provincial tourism operations that caused the Rainbow Country Travel Association that ran the location to fold. A temporary information centre was set up at the New Market Square and touch-screen kiosks were installed at Science North and Dynamic Earth. In July of the same year, disucssions were expected to get underway on including a visitor centre at the Via Rail building on Elgin Street, a designated historical site, if approval to move the farmers market to the location was given.

Making a case for a building complex that would bring together a museum, city archives and the main branch of the public library – "a home for Sudbury's past" – Rob Henderson (city director of citizen services) told CBC reporter Erik White, "...the collections are fragmented and the staff are fragmented." The city recently commissioned a feasibility study by Sudbury-based architects Yallowega Belanger. Although Henderson admitted that making a case for a cultural institution would be difficult, he pointed out that replacing the MacKenzie Street Library has been on the city's agenda since the nineties, and added that a community facility like this is "a beacon of what a city is all about." ¹⁹

In a city whose history is so intertwined with the production of its landscape (mining and reclamation activities) this begs the question, rather than contain the city's history within four walls, might it become an integrated and accessible part of the very fabric of the region? And, if reclamation (the natural) is in fact one of the largest facets of the community, that relationship might become manifest as a means to the aforementioned cultural needs.

¹⁵ For more information see: www.sudburymuseums.ca

¹⁶ Kate Rutherford, "Sudbury shutters Hwy 69 visitor centre", CBC News, June 28, 2013. http://www.cbc.ca/news/canada/sudbury/sudbury-shutters-hwy-69-visitor-centre-1.1350876; and, Laura Stricker, "Tourist welcome centre closed since March", The Sudbury Star, July 4, 2013. http://www.thesudburystar.com/2013/07/03/welcome-no-more

¹⁷ Erik White, "New museum, library to be considered by Sudbury council", CBC News, Jan. 9 2014. http://www.cbc.ca/news/canada/sudbury/new-museum-library-to-be-considered-by-sudbury-council-1.2489852

Transcribed from audio: Ron Henderson, Interview by Erik White, "Plans for new library and museum in downtown Sudbury", CBC News Morning North, Jan. 9, 2014. http://www.cbc.ca/morningnorth/past-episodes/2014/01/09/plansfor-new-library-and-museum-in-downtown-sudbury/

^{19 &}quot;New museum, library to be considered by Sudbury council", CBC News, Jan. 9, 2014. http://www.cbc.ca/news/canada/sudbury/new-museum-library-to-be-considered-by-sudbury-council-1.2489852>

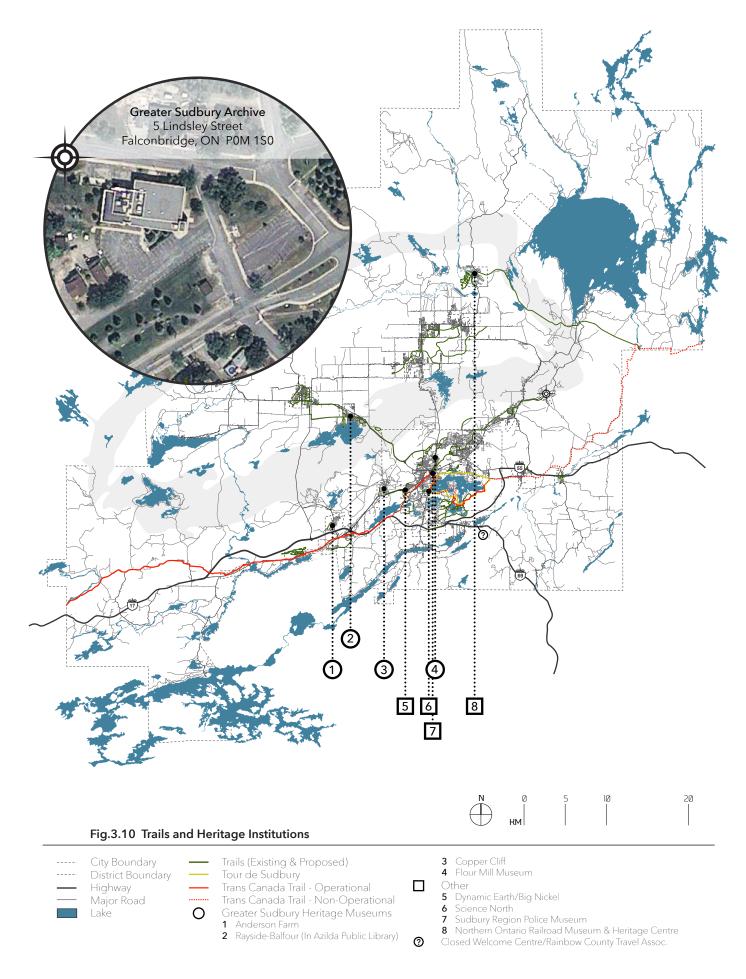




Fig.3.11 Anderson Farm Museum, Lively, July 2013 Curator's headoffice

Fig.3.12 (opposite) Copper Cliff Museum, April 2013
The museum is organized in the fashion of a historic miner's home. The fireplace was erected in 1927 to mark the spot of the first building erected in the community.



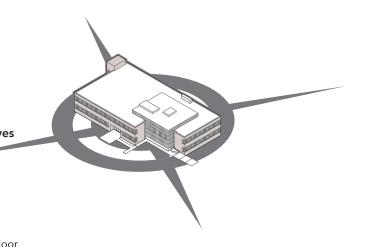


Fig.3.13 Exploded Axonometric of Greater Sudbury Archives

159 sqm

41,089 sq.ft (3817 sq.m)

Archival Storage1 Vault	47 sqm
Back-up Storage	297 sqm

Reading Room 324 sqm

- 2 Map Room3 AV Rooms
- 4 Reception
- 5 Photocopy Room
- Treatment Rooms6 Processing Room27 sqm
- Office Spaces
 - 7 Locker Room
 - 8 Volunteer Offices
 - 9 Staff Room
 - 10 Donations Office

Second Floor

13,873 sq.ft (1289 sq.m)

- S Future Exhibit Area
 - 1 Main Lobby
- Office Spaces
 - 2 Archive Interest Group Offices
 - 3 Conference Room
 - 4 Server Room

First Floor (Main Level)

13,468 sq.ft (1251 sq.m)

- Archival Storage

 Gab Storage
 Vault

 Back-up Storage

 Supplies

 102 sqm
- Treatment Rooms4 Quarantine74 sqm
 - 5 Temporary Holding
- Office Spaces 23 sqm 6 Maintenance Office

Ground Floor

13,748 sq.ft (1277 sq.m)

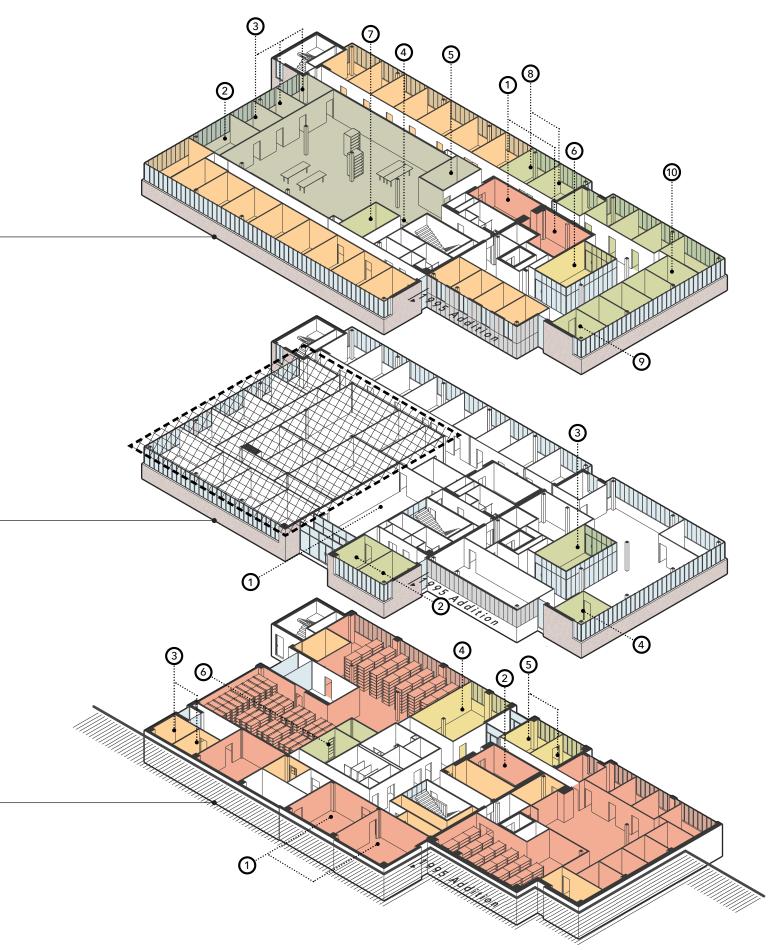




Fig.3.14 (opposite) Robinson Lake Trail, Sudbury, July 2013

3.2.2 Deriving the Trail

The design of the walking trail hacks into existing forms/sites/infrastructures/institutions to curate in three ways. The first deals with the micro by defining a set of localized juxtapositions across reclaimed and unreclaimed conditions. The second and third deal with the macro by deriving the path itself as a regional set of connected sites, but also as relationship between the larger geological and urban structure. In this way the trail archives the sites themselves, and the very structure of the region.

The earliest regreening projects identified primary transportation corridors and connections into the urban centre. "The Airport corridor was chosen because it desperately needed cleanup efforts to ameliorate the visual impression dead standing vegetation debris and semi-barren landscape had on visitors coming into Sudbury from the Airport." In contrast to this strategy, which still persists today (prioritizing inner-city and urban greening) the path defines the edge between opposing surface conditions, straddling regreening on one side and unreclaimed spaces on the other. A set of secondary paths intersect the primary trail, cutting across regreened areas and into an unreclaimed space (or vice versa). In so doing, the trail negotiates a set of abandoned/hazard mine sites by reinstating connections that have been lost because of mine closures or abandoned town sites, repositioned transportation corridors or other. This strategy presents locals and visitors alike with the complex realities of a city which is known and celebrated for its regreening, but also still operates extensive mining landscapes which continue to produce 'damaged' landscapes. Unlike usual strategies which 'centralize' trails and green corridors within the urban area, the trail traces an edge on the periphery of the urban area. In this way, it emphasizes the location of downtown Sudbury at the edge of the basin rim, not as the centre of the constellated network, and emphasizes the larger constellated structure: 'valley' and urban area divided by the south-east rim of the sudbury basin.

²⁰ Lautenbach, Land Reclamation Program 1978 - 1984, 13.

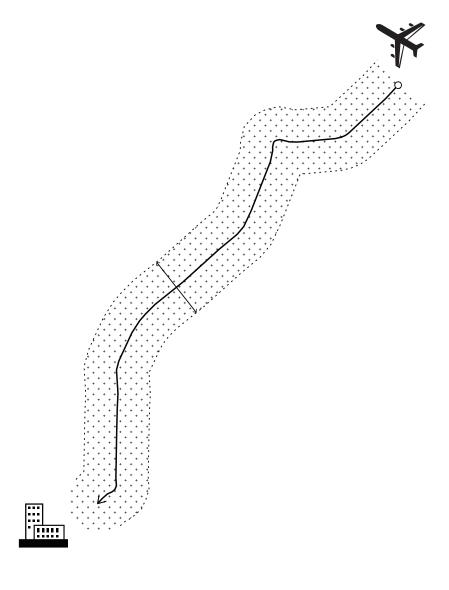
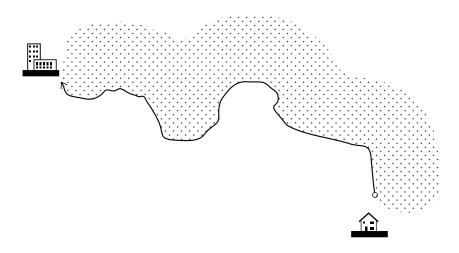


Fig.3.15 Diagram of early regreening "screens"

Regardless of the authenticity of the story from which the term originates, "Potemkin village" has come to describe, literally or figuratively, any construction which is built to deceive, generally as a means to hide an undesirable or damaging situation.

Planted conifers now form screens along highways, limiting view of lessaccessible areas that have not yet been planted."

John M. Gunn, Restoring the Smelter-Damaged Landscape near Sudbury, Canada, 1996



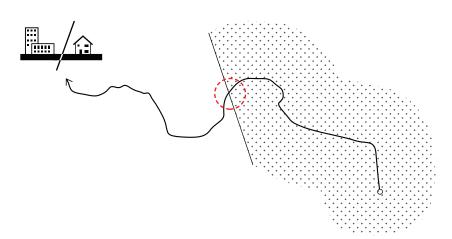
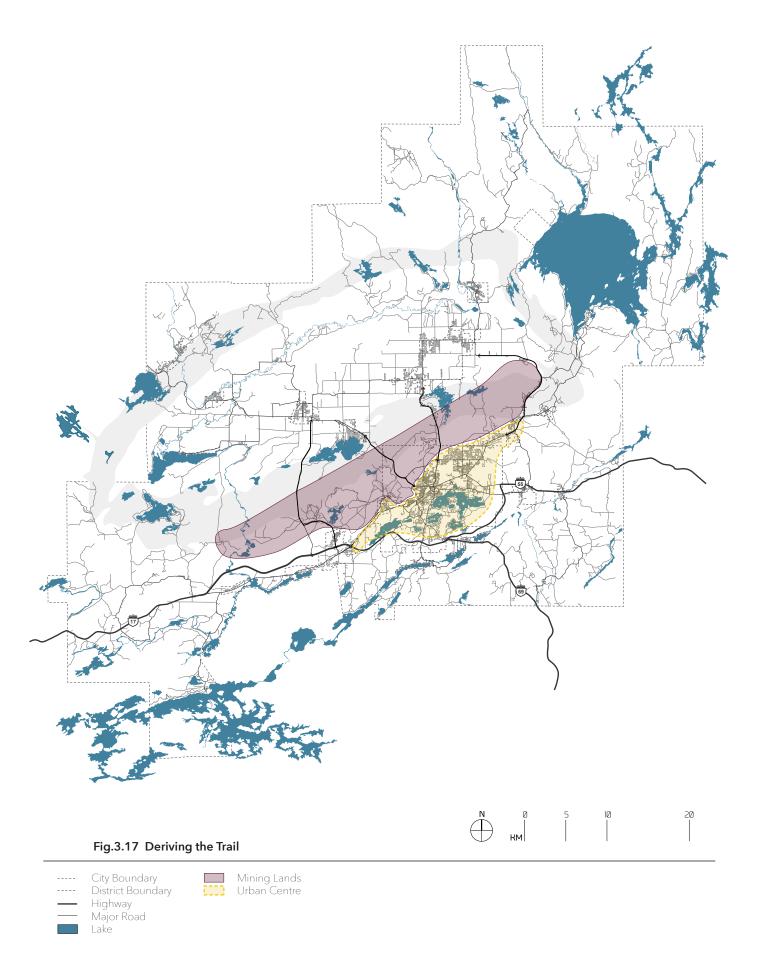


Fig.3.16 Trail Design Strategy

In contrast to early regreening efforts which treated up to the visible 'edge' of public corridors, and current efforts to 'fill in' areas within the city that have not yet been reclaimed working outwards towards the centre of industrial operations, curation aims to occupy that edge, walking the transition between and across reclaimed and not-reclaimed landscapes. The idea of the 'edge' is intended to apply to physical and abstract juxtapositions between reclaimed and not-reclaimed conditions. Emphasizing surficial (and visible) features but also to evoke those which run deeper.

(top) primary trail networks run in the direction of the 'edge' (bottom) secondary trail networks cut across it.



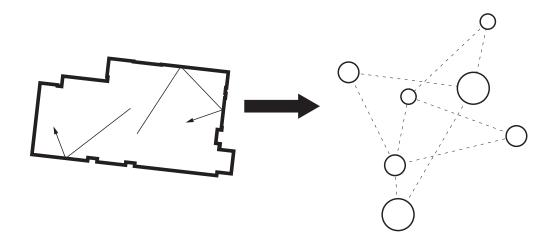


Fig.3.18 Moving Outside Four Walls

As a way of liberating the archive from the confines of artefacts in a room (and the limitations that come with it), the design of a trail links new and existing sites into a network which archives the sites themselves; built and non-built.

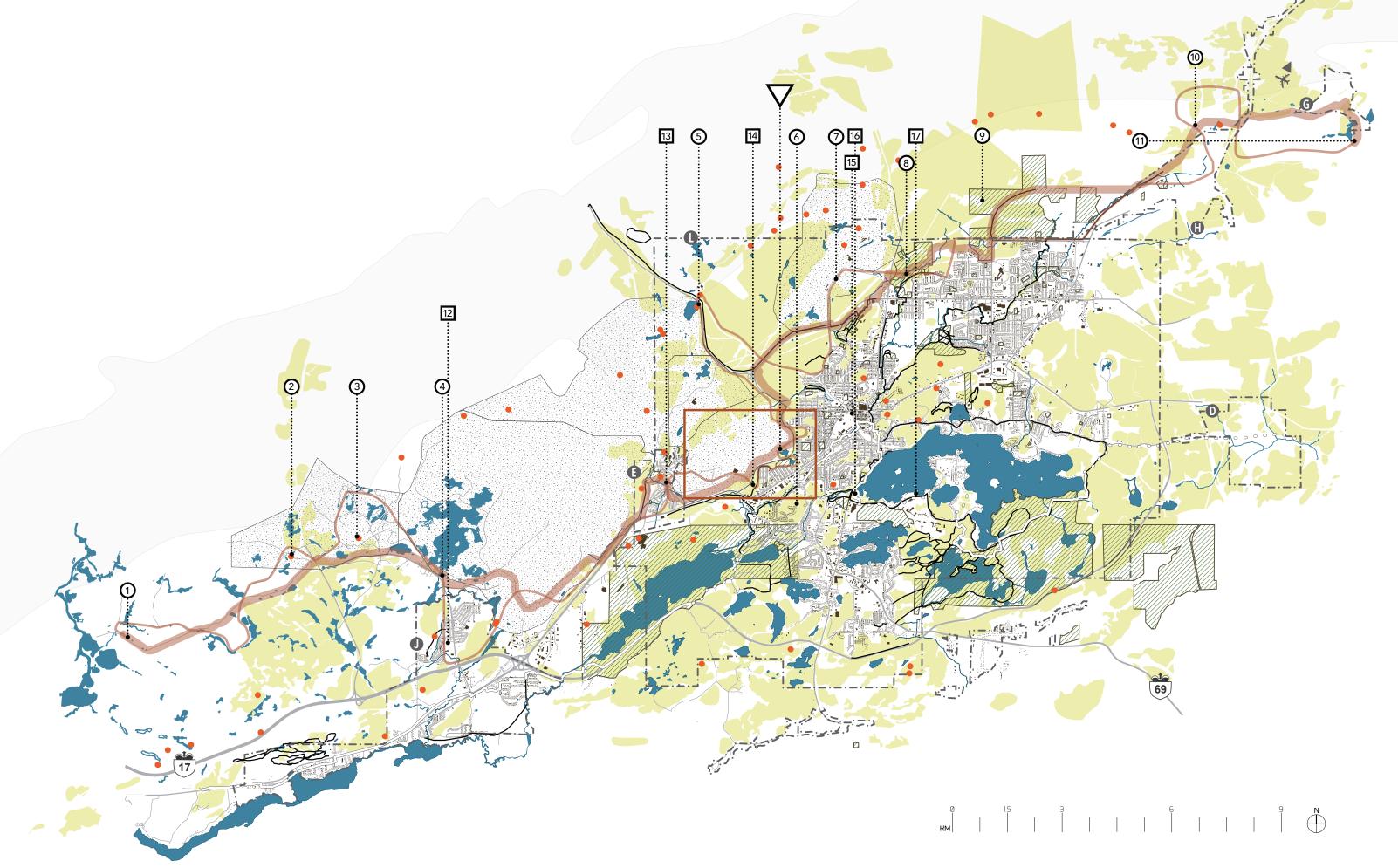
Fig.3.19 The Trail

Currently the Trans Canada Trail (TCT) comes into Sudbury south of Highway 17 and into the centre of the city, wrapping around Ramsey Lake before approaching Coniston. This trail is conceived as an alternative to the current TCT route, engaging the edge between the valley of the basin and its outer edge, and between the urban area and the industrial area which divides it from the agricultural communities. The intervention of the trail and site markers aim for minimal impact on the site. The value in interventions (temporary or permanent) at any number of these sites is not in a single author's vision, but in the collaborative or collective efforts of multiple individuals and groups to produce works (scientific or artisitic) that can be deployed along the trail. This idea will be elaborated upon and facilitated by my design of an Interpretive Landscape Archive and Laboratory.

Curated Content

- City Boundaries
 Coniston
 Copper Cliff
 Falconbridge
 Garson
 Lively-Mikkola-Naughton
 Sudbury
 Sudbury Igneous Complex
 Water Bodies (Lakes, and man-made)
 Parks
 Trans-Canada Trail (Existing & Future)
 Existing Trails
 AMIS Abandoned Mine Site
 Regreened Sites

 Smelter Complex Slag Dump
- Primary Path
 Secondary Path
 O Landscapes
 1 O'Donnell Roast Yard (AMIS ID 96002)
 2 Gertrude (AMIS ID 05268)
 3 Creighton (AMIS ID 05620)
 4 Meatbird Park
 5 Murray Mine (AMIS ID 05465)
 6 Corsi Hill
 7 Frood-Stobie Mine
 8 Nickeldale Conservation Area
 9 Maley Conservation Area
 10 Garson Mine
 - 10 Garson Mine
 11 Happy Valley
 Architecture
 12 Anderson Farm Museum
 13 Copper Cliff Museum (AMIS ID 05325)
 14 Dynamic Earth
 15 School of Architecture
 16 Science North
 - 17 Living with Lakes Centre
 ▼ Interpretive Landscape Archive and Laboratory







 * Satellite Images through 156 - 165 are not to scale, but are depicted at the same size for relative comparison.

Fig.3.20 O'Donnell Roast Yard, Sudbury: Mine Hazard No 96002

Incredibly concentrated toxic sites, roast yards are some of the most scientifically significant points of study. Natural regrowth generally stops at the edges of the beds. Individual roast beds were 100 feet long and 60 feet wide, stretching in two rows, serviced by rail. When the yard shut down the small settlement that accompanied it emptied. Apart from the yard itself, the only discernible features of that history are the remains of a number of basement walls.

This site is widely noted for its significance to cultural heritage, but on Vale property it is inaccessible to the public apart from guided tours, which are increasingly scarce. The trail follows the rail lines into the site and traces the edge of the yard.

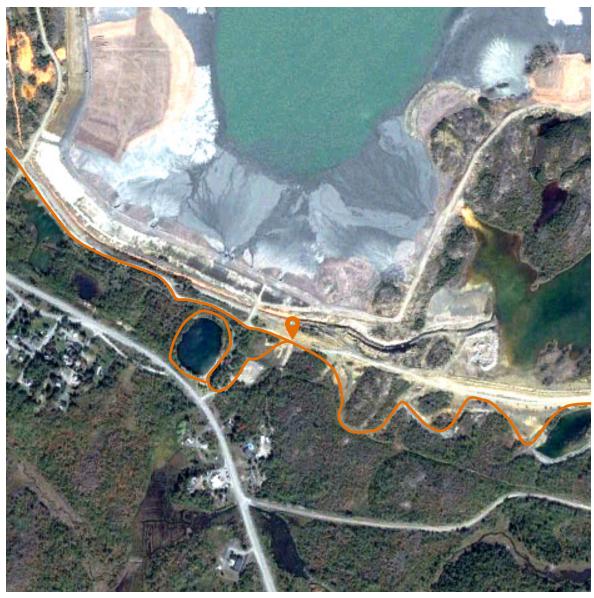






Fig.3.21 O'Donnell Trail

A concrete path hovers just above the ground in a single narrow ribbon around the perimeter of the roast yard. Information about the site is posted on a gabion wall of cut timber logs, 5 feet high as cord wood was typically piled to fuel the roast fires.



•

Site Marker

Trail

Fig.3.22 Meatbird Park

A small playground on the lake where many locals go swimming. Between June 23rd and August 19th between 11:00am and 7:00pm there are lifeguards on duty. The site is part of a trail corridor belonging to the Rainbow Routes.

The parking lot to the south-east of the site is edged by a series of large rocks, the only thing preventing people from investigating the private property. The face of this heap underwent the same treatment as the slag heaps on Big Nickel Mine Drive. Perched ontop of one of these rocks you can just glimpse trucks working towards the other side of the heap.

Fig.3.23 (opposite) Meatbird Park, view from parking lot



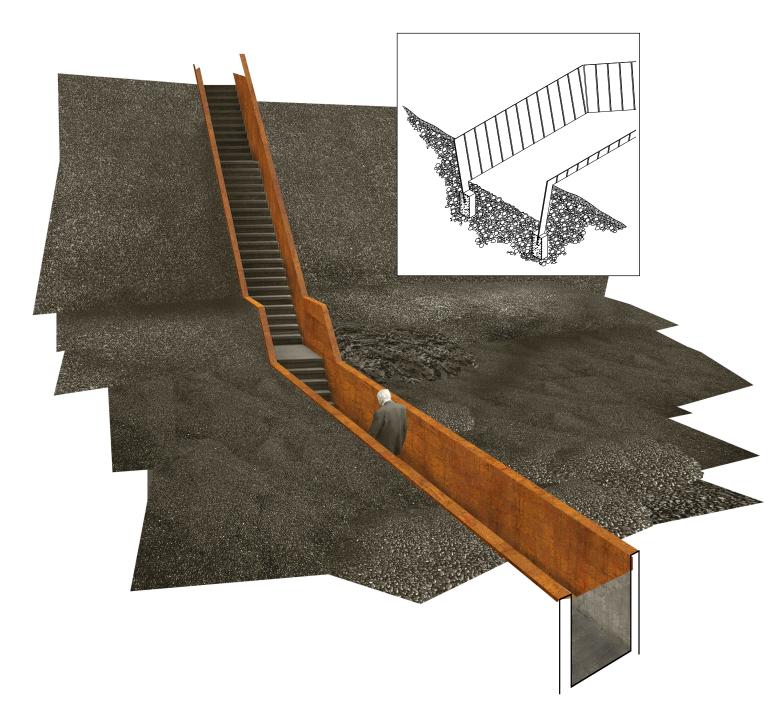


Fig.3.24 A walk through slag

This design was another early design intervention. Conceived as a slag pour, a copper edged stair case cuts through the slag, level with the surface. In an iteration of it (line drawing) the slag heap has been reclaimed, but the cut reveals the slag as the path surface. The copper walls of the path are arranged like blades, evenly spaced to reveal the slag below the hydroseeded surface.





Fig.3.25 Slag



9

Existing Site Marker



Site Marker

Trail

Fig.3.26 Murray Mine

A mine plaque located just off the highway, across from the pit is all that marks this place as historically significant, posted to the opposite side of the street.

Fig.3.27 (opposite) Discovery of The Sudbury Nickel Deposits





Fig.3.28 Meatbird Trail





9

Site Marker

Trail

Fig.3.29 Happy Valley





Fig.3.30 Site Intervention

At one time, the only significant remaining feature at Happy Valley, apart from the piles of debris are the tombstones marking the graves of the earliest villagers in the community. Concrete bollards in a concrete plaza memorialize the tree stumps that once littered the region.



Anderson Farm Museum

Constructed over an old mine shaft, the program offers tours of the old tunnels and features the Big Nickel up high on its property.



Copper Cliff Museum

This building is no more than a few square metres in size, a replica of the first building in the city that was constructed at Bell Park for the cities centennial celebrations. It was later relocated to its current site in Copper Cliff as a museum location.



Science North

Designed by renowned Canadian architect Moriyama & Teshima, the building was conceived as a snow flake perched on an outcropping highlighting the qualities of the sudbury basin geology. The centre is also integrated into a trail network that wraps a length of Lake Ramsey and Bell Park.

Fig.3.31 Cultural Institutions



Living With Lakes Centre

Multidisciplinary research and monitoring institute designed to assist in the protection and management of northern aquatic systems.



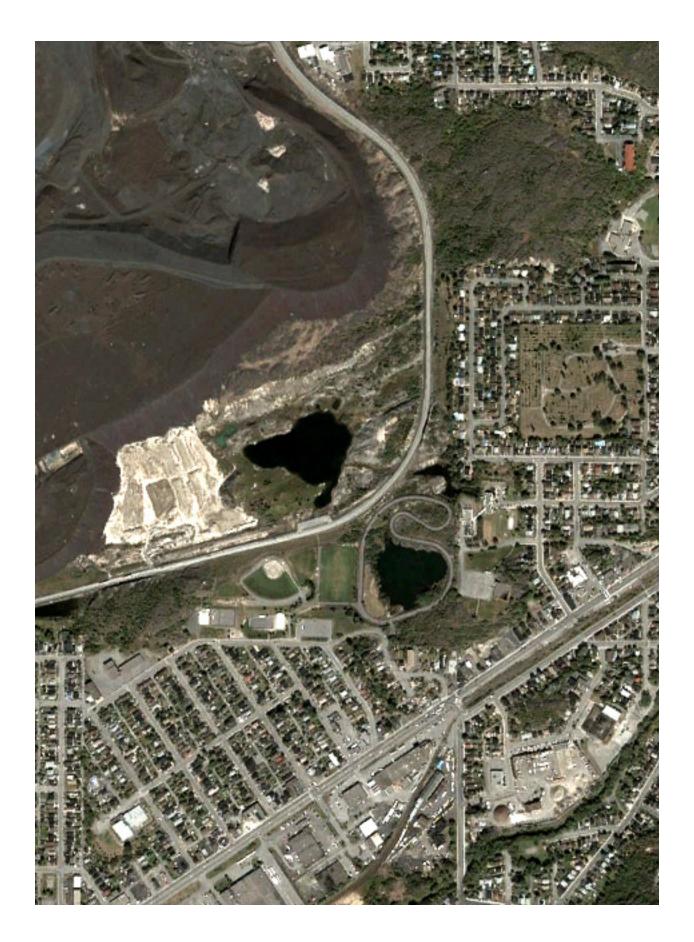
Site for New School of Architecture



Dynamic Earth

Constructed over an old mine shaft, the program offers tours of the old tunnels and features the Big Nickel up high on its property.





For many decades, the place to take out-of-towners was the Inco slag dump.

The strange, dazzling, volcanic experience was the one spectacle Sudburians could count on to make a lasting impression on visitors."

Oiva Saarinen, From Meteorite Impact to Constellation City, 268

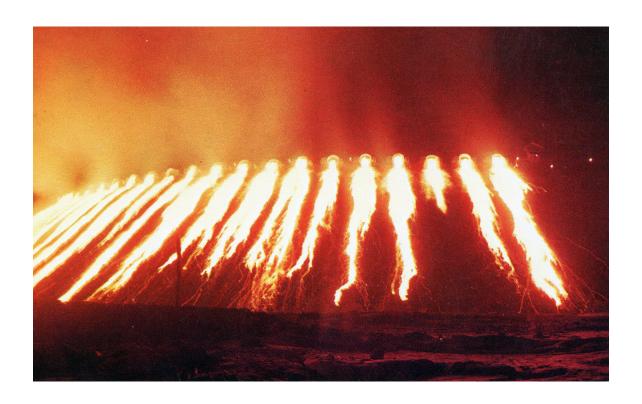


Fig.3.33 Slag pour at night

When the darkening sky and the black rock blended into one at the horizon, the far-distant creaking and clanging of the smelter trains would start up. Waiting, I lit a little pile of dry white twigs culled from nooks and crannies in the bedrock. The hand-size fire held back the cold and the dark, as it might have done for a cave person. The noise of the rail cars fluctuated in and out in intensity as the wind fluttered and gusted. The train tracks were laid on the slag formed from the dumped molten waste that fractured as it cooled into broken pottery lumps the size of tea cups. When the curtain of debris grew too far from the edge of the track to permit the fiery liquid to pour down the side of the tip, the tracks would be taken up and relaid closer to the edge, ready to receive the next creaking train adding its slag to the advancing wall.

When the noise stopped, my eyes, raised from the fire light, met absolute darkness. But, where the noise had last been heard would appear, suspended in the blackness, an orange-red eye as the first of the rail cars tipped on its side, exposing its mouth and disgorging its molten cargo. As the tapering red stalactite of lava flowed down the unseen side of the slag heap, its light faded and died to a glow. Another car would tip, then another and another, until a necklace of fifteen glowing columns was suspended in its pitch-black frame. Neon-red silhouetted against the infinite, inexorable, and devouring black occupied all the spaces of my mind.

- Bruce A. Clark, Justice in Paradise, 15



Fig.3.34 (opposite) Sand Pit Lake, Sudbury, April, 2013

CHAPTER 3.3

Interpretive Landscape Archive and Laboratory

The Sudbury slag heap was a significant attraction in the city for many years, and simultaneously constituted culture and entertainment.

For nearly 100 years, countless men and women, Sudbury miners, laboured to bring containers of molten metal to the heap, risking life and limb as they poured the lava over the sides. The result is a monument of silica and iron the scale of which only a satellite image can reveal.¹

Today, tours are no longer given, and as the active slag dump moves further into the industrial area, it is further removed from public memory. An immense pile of fragmented molten rock, the application of grasses – literally adhered to the surface of the slopes – turns the geography back into a unified hill, not unlike any other generic grassed roadside in Canada. Under the cover of green, the realities of the site's construction and the larger implications of its existence within daily life defy understanding, just as they defy surface detection. Despite being reclaimed, ownership of and liability for this remarkable landscape belongs exclusively to Vale. From the road, a fence which runs the length of the site comes in and out of view.

Taking note of the need for a visitor centre and consolidated archive/library, the proposed building program responds directly to these needs by establishing a centre which aids and stimulates the discovery process and facilitates intellectual but also emotional connections to the landscape. Via its siting, the building physically renews a relationship to the largest man-made landscape in the region and assembles every resource related the environment and landscape into a single location. The building is both container (for archival material) and device (archiving the landscape itself). Mark Whitehouse described the slag heap as, "a creation – this city's creation – and as such, a form of art writ large."

The notion and significance of art is a defining focus of the Musagetes foundation in Sudbury. A defining inspiration for the building program comes from a brief abstract for the Musagetes Cafe discussion titled "No Place to Build a City": "In Sudbury, artists are not needed to decorate the city but instead, to guide the urban discourse in more innovative and ecologically sustainable directions." This is where the notion of 'laboratory' comes in. In place of the usual scientific study of reclamation, the centre acts as a creative lab/studio for visiting professionals/students/locals, of creative or scientific discipline to study the landscape and develop projects and ideas within the landscapes themselves; as a means of re-claiming sites by experimenting with ways of negotiating new experiences and relationships with them. The building itself and the activities within it activate the trail to expand upon the possible futures of damaged landscapes.

Mike Whitehouse, "Inside-out city", Sudbury Star, 30 July 2011.

² Ibid.

^{3 &}quot;Musagetes Sudbury Cafe: Program of Discussions", Sudbury: Life in a Northern Town, 67.





Fig.3.35 RegradingEarth movers regrading the slag heaps to receive liming and seeding and achieve better adherence.

Fig.3.36 Regraded HeapsAerial view of the regraded slag heaps before liming and seeding along Big Nickel Mine Drive.





Fig. 3.37 (top) Aerial view of regreened slag dump

Aerial view of the regraded slag heaps demonstrating the successful grassing of Big Nickel Mine Drive. From Carman Construction.

Fig.3.38 (bottom) Bernd Lottermoser, Hydroseeded slag dump, Sudbury, Canada.

Fescue grasses are "hydroseeded onto a custom mulch blend of wood fibres and glues.... The plan is to continue regreening from the outer edges, retreating back toward the smelter, presenting a greener healthy forested landscape."

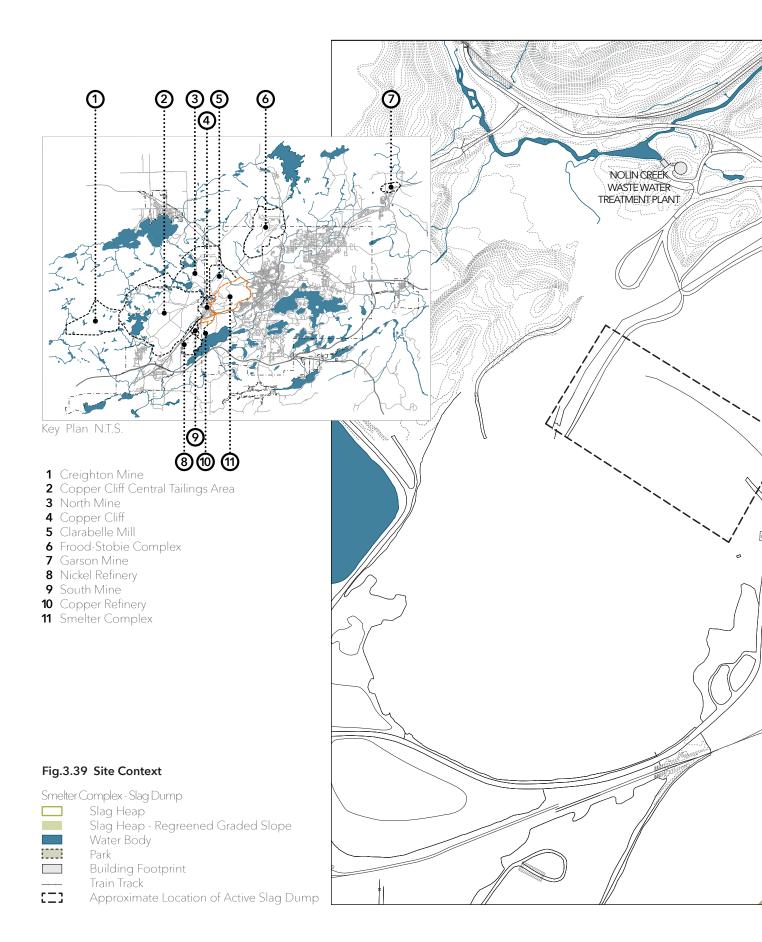








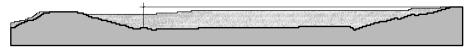


Fig 3.40 (previous) View 1, April 2013 See Fig.3.43, 191.

Fig 3.41 View 2, April 2013See Fig.3.43, 191. *Old Highway 144, off Big Nickel Mine Dr.*

Fig 3.42 (opposite) View 3, April 2013 See Fig.3.43, 191.

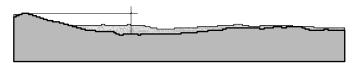




Site Section A \mid Top of Heap 25.5m above street level



Site Section B | Top of Heap 34.5m above street level (Section taken through surface of water)



Site Section C \mid Top of Heap 25.5m above street level

Fig.3.43 Site Sections



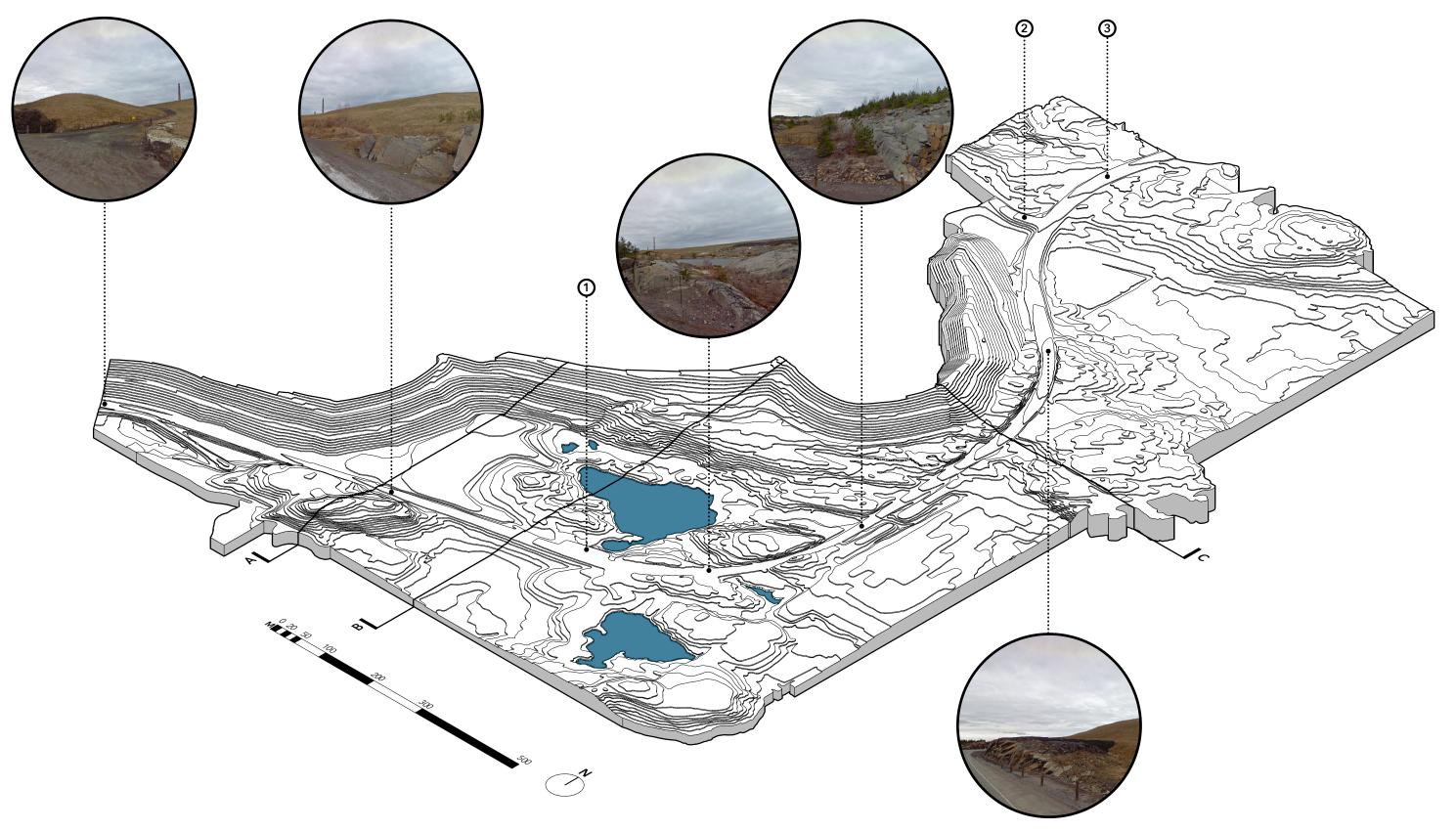
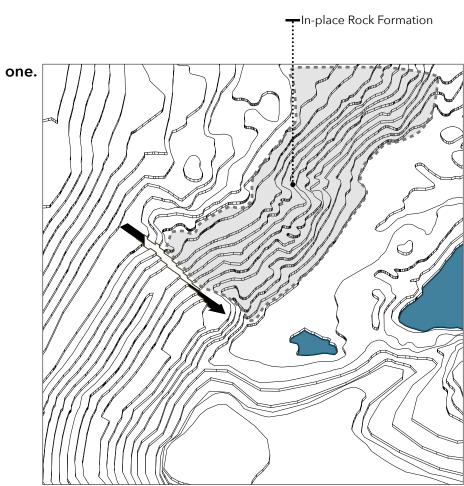


Fig.3.44 Site Axonometric



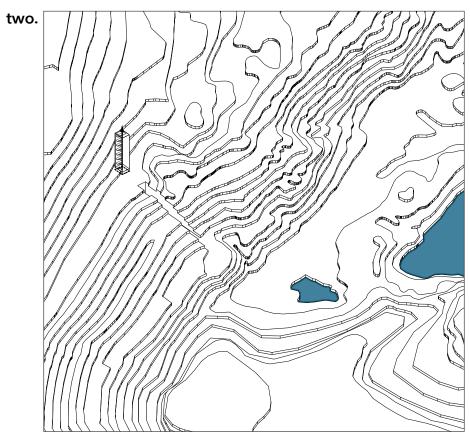
This portion of the slag heap was selected as the site of the building to negotiate the different conditions that exist on it (reclaimed lake and in-place rock formation), and for its connection to the city via Delki Dozzi park immediately across the road.

It is also the only place along the length of the heap that it pulls away from the road, creating a large open landscape in front. Approaching the building from Big Nickel Mine Drive extends or thickens the threshold between the urban and the industrial.

Where the slag heap ends and the natural rock formation protrudes from under the weight of the slag, a single cut is made. The slag is stripped from the rock and held back by a retaining wall of slag gabion baskets. The opposite side (in place rock) is blasted to create a wall of solid rock.

Fig.3.45 Building Diagram One

192

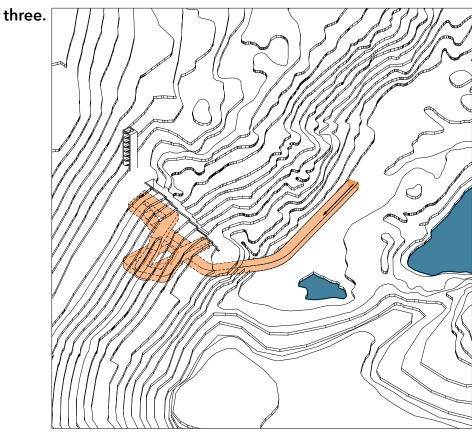


The cut acts as the access to an observation tower, like a revserse mine shaft that emerges from the heap. Passing between crushed slag and blasted rock face, the end of the path ascends straight up, through the slag (to connect with the upper tier pathway) and higher still to 30 m above the tallest heap. From here, views are granted towards the super stack - across the active slag dump that lies beyond the greened 'facade' - and back towards the downtown.

More than this, the tower acts as a beacon; a colour coordinated light show which, in concert with the surrounding air monitoring stations, broadcasts information regarding air quality.

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Fig.3.46 Building Diagram Two



A single ribbon, 6m wide by 4m tall stretches across the base of the 'in-place' rock formation and enters the base of the slag heap looping once before climbing a level. The upper level winds up and back down, exiting into the landscape 'cut' (forming one of the main entrances into the building).

On an industrial site, the building form is also conceived as a way to borrow from mine construction, utilizing the same equipment to tunnel into the hill.

Fig.3.47 Building Diagram Three

Fig.3.48 Ground Floor

The Archive occupies the inside of the slag heap. The Archival storage area is imagined as an ore body, a valuable source of information to be extracted. Reading rooms and offices wind through the hill and around the storage area.

The Lab occupies the face of the 'in place' rock formation, negotiating the bottom of the hill and Sand Pit Lake (which is actually a reclaimed flux pit). The building utilizes solid and transparency to negotiate views in either direction, towards the lake and towards the rock face. Entering the auditorium, the north wall is fully glazed, as seating descends parallel with the rock face. Nestled immediately up against the base of the rock, windows in the studio (north facing) frame moments in the surface of the rock face.

Archive

- 1. Open office/work space Archive Processing
- 2. Archive Storage
- 3. Two Offices
- 4. Kitchen and Staff Room
- 5. Meeting Room
- 6. Gallery

Lab and Visitor Centre

- 7. Storage
- 8. Workshop and work rooms
- 9. Studio lounge
- 10. Studio
- 11. Multipurpose Room
- 12. Information Desk and Office
- 13. Restrooms
- 14. Auditorium

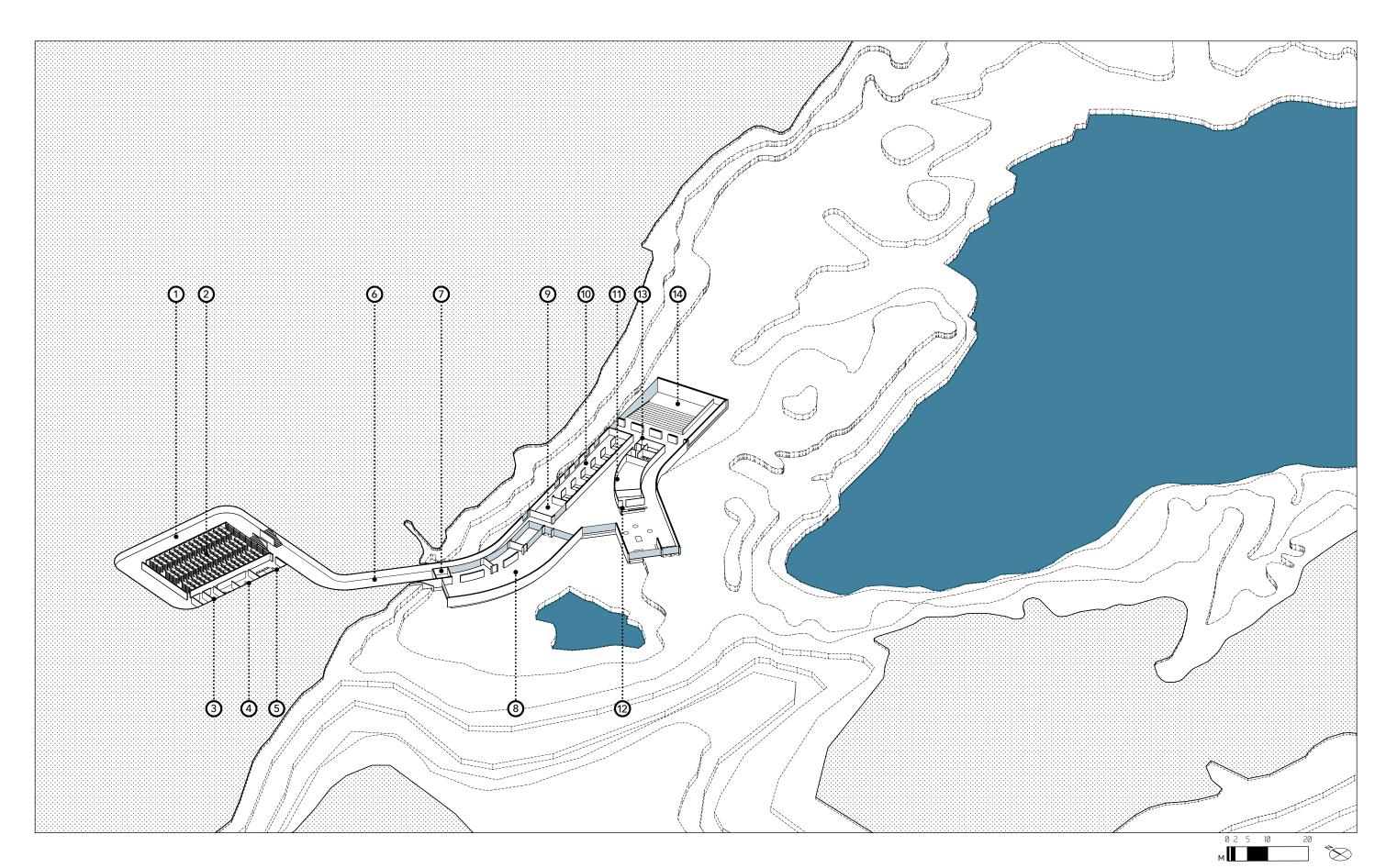




Fig.3.49 View of Studio

Looking out at the rock face.



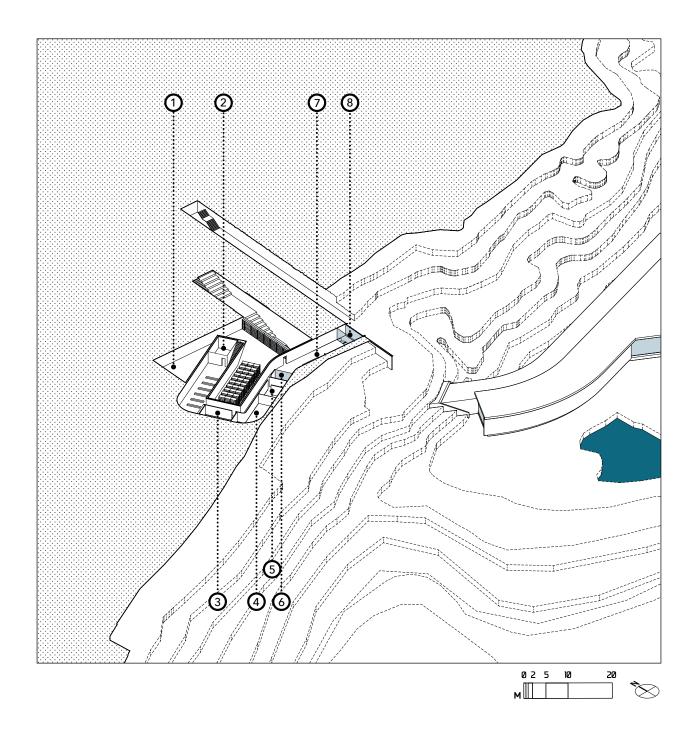


Fig.3.50 Second Floor

The primary entrance to the Archive is from the 'cut', through the slag gabion wall.

Archive

- 1. Archive Storage
- 2. Archivist's Office
- 3. Meeting Room
- 4. Restrooms

- 5. Copy/Scan Room and Storage
- 6. Donations Office
- 7. Reception and Gallery
- 8. Entrance Vestibule

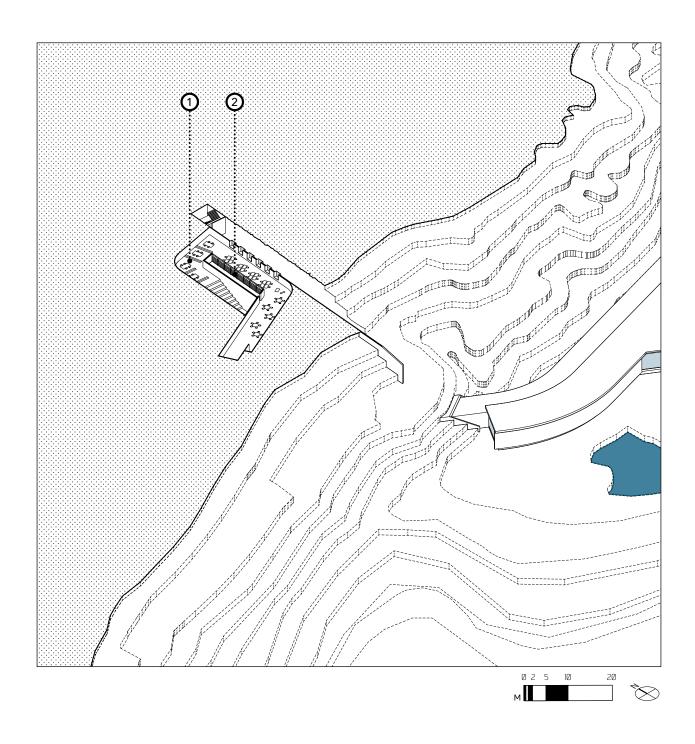


Fig.3.51 Third Floor

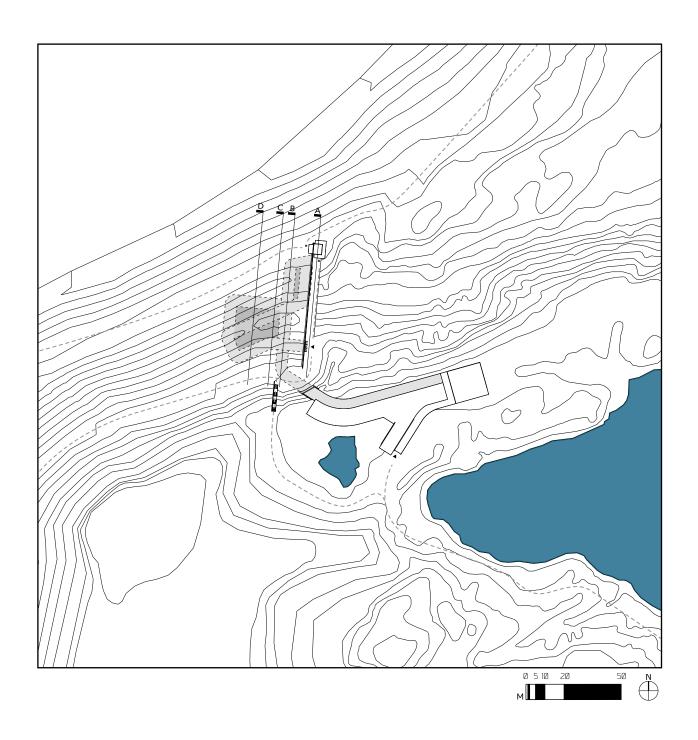
As the loop wraps around, running parallel to the 'cut' reading nooks project out of the wall, revealing the height the building has climbed under ground in relation to the opposite wall of rock.

Archive

- 1. Open Reading/Study Area
- 2. Archive Storage

Fig.3.52 Site Plan A second 'cut' connects the first plateau of the slag heap back down to grade, picking up the trail that runs the length of the top of the slag heap, between the edge of the greened public 'facade' and the active slag dump beyond, and the trail that traces the west edge of Sand Pit Lake towards Delki Dozzi Park across the

road.



Studio/Research Area Archival Storage Trail Connections





Rock that is blasted and slag that is removed in the construction of the building are left on the site as a way of revealing the tensions between a "productive" landscape, and the consequences of the process. Some varieties of slag may be re-purposed as an aggregate in concrete or as a paving material, here it is re-imagined as the fill for a gabion basket facade. The cut through the landscape is curatorial - positioning you between the natural rock face and the fragmented wall of slag - providing a sense of scale and depth to the dump site.

Coloured lighting in the stairwell of the observation tower is coordinated with data from the air monitoring stations in the vicinity and each viewing deck of the observation tower acts as a measure of each level of the slag heap. One of these at a vantage point from which you can see the edges of the grassy facade that has been applied to the heap.

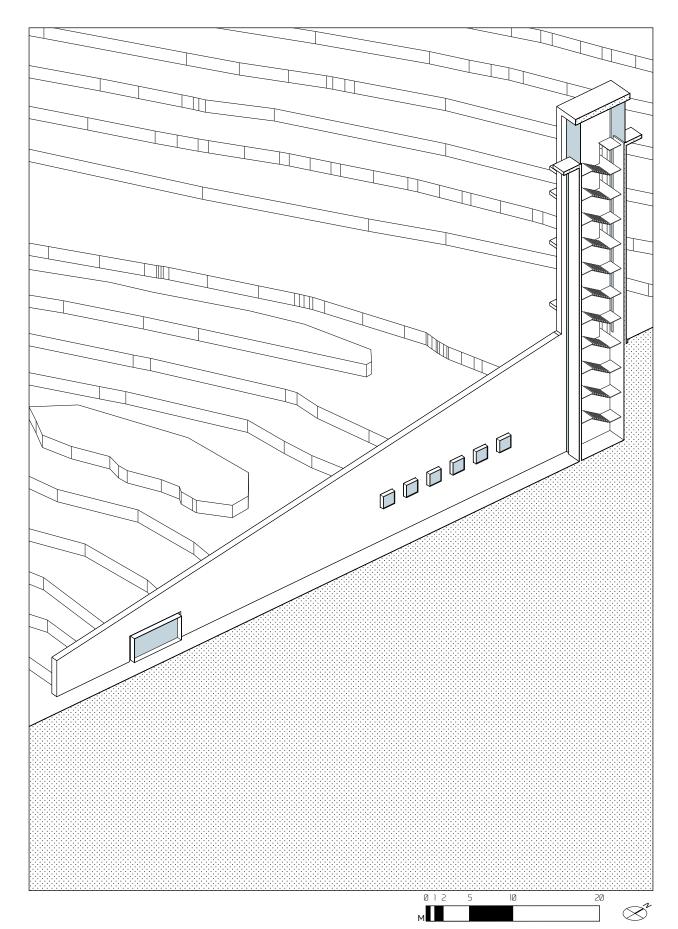


Fig.3.55 Section B The ribbon ascends the height of the heap in sweeping stair cases for more casual reading space. The wall of archival storage in this space is a fully glazed shelving system, displaying some of the less sensitive records. At the current archives building, storage is on the lowest level, maintaining a distance between the records and the third floor 'public reading room'. Passing through the stair at the lowest level continues the lowest loop, the administrative and processing area of the archive.

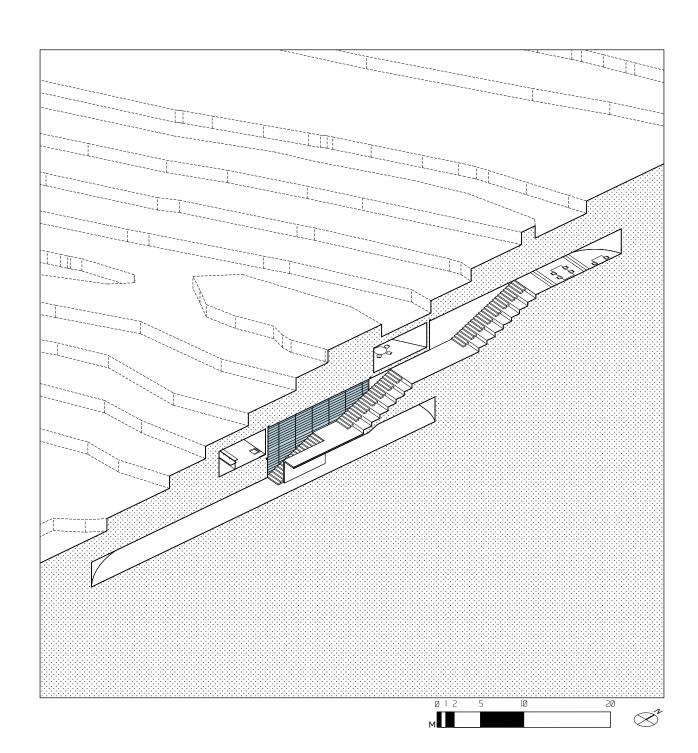
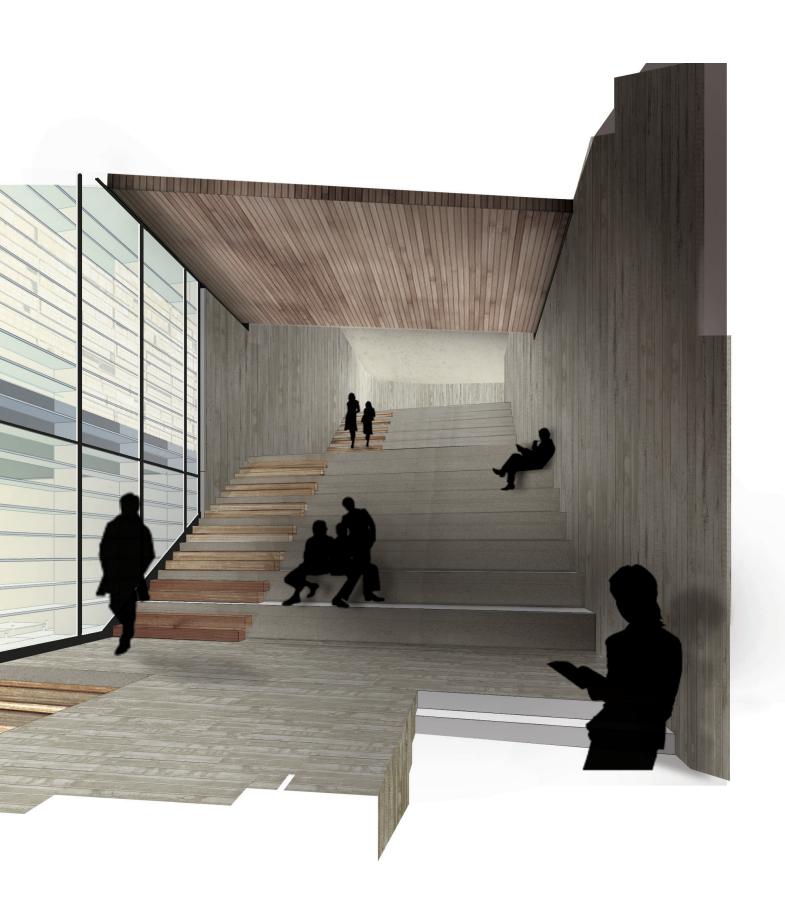




Fig.3.56 Archive Staircase

The principal materials in the archive are concrete and wood. As the stair ascends it passes by the archival storage. The wall which separates the 'tunnel' from the storage area is a full height shelving system. The material is processed and curated from behind, accessible from the front by a sliding glass door system; reinforcing a relationship between the public, the archivists and the material.



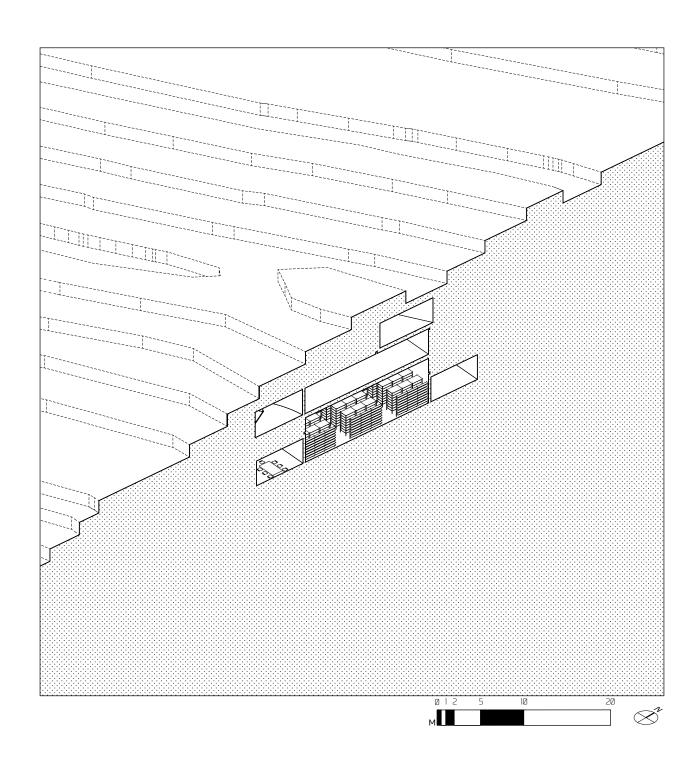


Fig.3.57 Section C

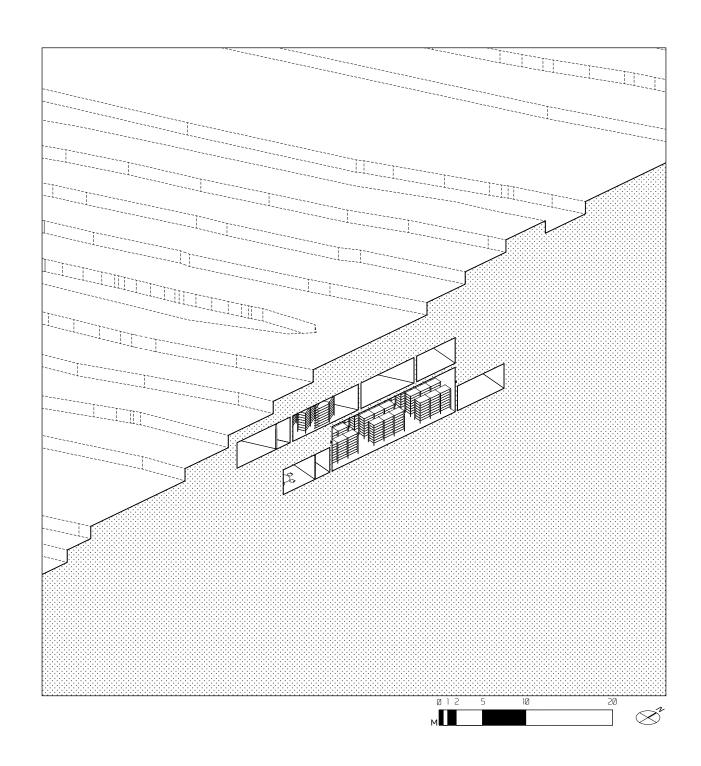


Fig.3.58 Section D





Fig.3.59 Visitor Centre and Lab Entrance

The face of the workshop is clad in vertical wood louvres to control southern exposure. Board form concrete, is used at the entrance, and copper clads the auditorium which book ends the building. The entrance and facade facing Sand Pit Lake are clad in a polished black metal, reflecting back a view of the lake and park.



Fig.3.60 (opposite) View from West End hilltop towards iconic Sudbury water tower, July 2014

CONCLUSION

Although beyond the intended scope of this thesis, I hope that the critique of restoration in Sudbury, Ontario suggests a broader criticism; one which implicates the contemporary sustainability agenda in an 'either/or' approach to both landscape and architectural design. As imperatives for sustainable action evolve and expand, we must also evaluate the metrics by which its successes are measured. For the most part, sustainability has been viewed as a problem of ecological and physical health: a development and preservation of processes that support life. How might sustainability address the thesis trialectic - sociology, geography and history - as an alternative to conventional ideas of health? Mirko Zardini feels that today:

Architects are telling you their buildings are sustainable, even though the environments they place the buildings in are not. The idea of sustainability, in reality, is not a technical problem but it's more a political, social and economic issue.¹

A sustainability narrative simplifies the everyday intimate relationships between community and industry, assuming a standardized and prescriptive approach that ultimately suppresses diversity. In the opening lines of his book *The Already Dead*, Cazdyn states,

The lesson here is that if you really want to understand a system and make significant change (and not just manage symptoms), you must look away from what appears to be the immediate crisis and toward the crisis that is at work even when the system is functioning well. The crisis constitutes the system itself; the system cannot function without its internal crisis.²

Regreening was initiated at a moment when public criticism - tied to the economic viability of the city, the physical health of the population, and the quality of the environment - reached a critical mass. Over one hundred years after the opening of the first mine, many historic sites are being further explored and new mines are being introduced. Despite the outward appearance of a 'healing' landscape, and the merits of improved industrial operations, 'damaged' landscapes are still being produced. Regreening is conceived as a remedy for the negative imagery commonly associated with the city, but as a consequence disguises or detracts from alternative possibilities. The complex social, geographical and historical relationships of any context includes their inherent contradictions and frictions. The architect must act as a curator to forge these connections and juxtapositions.

The landscape and architectural design of an Interpretive Landscape Archive and Laboratory, brings the Social, Geographical and Historical context of the city into acute focus. The architectural intervention in the slag heap recovers the ways in which regreening has effectively erased the realities of its construction. Metaphorically the design of the archive 'mines' the landscape for a value other than nickel or another commodity: for the information about Sudbury's industrial and reclaimed landscapes. The act of walking the trail and entering the building reinforces both sides of the narrative (restoration and degradation) by; forging connections to and an awareness of the hazardous sites that exist outside the urban condition; juxtaposing construction methods across fragmented and in-place geological formations; and, integrating natural and cultural heritage.

Although sustainability remains integral to the future of architectural design, contributing to the reduction of pollution and the intelligent management of resources, architecture is much more than a technical device for eliminating or reducing pollution. It is the device through which we come in contact with our diverse and complex local contexts.

¹ Mirko Zardini, quoted in: Paul Makovsky, "Game Changers|Mirko Zardini", Metropolis Magazine, Jan. 2012. http://www.metropolismag.com/January-2012/Game-Changers-Mirko-Zardini/

² Cazdyn, The Already Dead, 1.

WORKS CONSULTED

Books & Articles

canada/sudbury/water-tower-take-down-like-peeling-a-banana-1.1122888. (accessed, June 2014).

_____. Messages From Across Time and Space. DodoLab and Smudge studio. 2012. http://musagetes.ca/wp-content/uploads/2012/06/Sudbury_Letters_EN.pdf. (accessed May 2014).

______. "Sudbury wants abandoned mines clean up, re-purposed," CBC News. June 11, 2013. online: http://www.cbc.ca/news/canada/sudbury/sudbury-wants-abandoned-mines-cleaned-up-re-purposed-1.1303377. (accessed July 2014).

_____. "Businesses impartial to Sudbury 'resourceful' slogan," CBC News. Jan. 30, 2014. online: http://www.cbc.ca/news/canada/sudbury/businesses-impartial-to-sudbury-resourceful-slogan-1.2516983. (accessed April 20, 2014). (accessed April 20, 2014).

"Water tower take-down like 'peeling a banana'", CBC News. Nov. 30, 2011. online: http://www.cbc.ca/news/

_____. "Sudbury hilltops see more protection from development," CBC News. Jan 6, 2014. online: http://www.cbc. ca/news/canada/sudbury/sudbury-hilltops-see-more-protection-from-development-1.2485283. (accessed May 2014).

Amils, R., J. C. Ellis-Evans, and Helmut Hinghofer-Szalkay. Life in Extreme Environments. Dordrecht: Springer, 2007.

Burke, Edmund. The Sublime and Beautiful. University of Adelaide ebook. http://ebooks.adelaide.edu.au/b/burke/edmund/sublime/

DeStefano, Dick, and Stan Sudol. "Sudbury Dumped on the Slag Heap of History - Stan Sudol," *Republic of Mining*. July 1, 2013. online: http://www.republicofmining.com/2013/07/01/sudbury-dumped-on-the-slag-heap-of-history-stan-sudol-originally-published-in-the-sudbury-star-february-6-2004/ (accessed June 2014).

Duncan, James S. The City as Text: The Politics of Landscape Interpretation in the Kandyan Kingdom. Cambridge: Cambridge UP, 1990.

Allen, Stan, and Marc McQuade. Landform Building: Architecture's New Terrain. Baden, Switzerland: Lars Müller, 2011.

Anand, Madhur, and Adam Dickinson, eds. Regreen: New Canadian Ecological Poetry. Sudbury, Ont.: Your Scrivener, 2009.

Bachelard, Gaston. The Poetics of Space: The Classic Look at How We Experience Intimate Places. Boston, Massachusetts: Beacon Press, 1994. http://monoskop.org/images/1/18/Bachelard_Gaston_The_Poetics_of_Space_1994.pdf.

Basu, Paul. "Museum, Landscape and the Storytelling Space Between," *Landscape & Arts No. 34/35*. Autumn/Winter, 2005, 2-6. online: http://www.ucl.ac.uk/archaeology/people/staff/basu/usercontent_profile/basu_museum_landscape.pdf. (accessed July 2014).

Borasi, Giovanna, and Mirko Zardini, eds. Imperfect Health: The Medicalization of Architecture. (Montréal: Canadian Centre for Architecture). Zürich: Lars Müller Publishers, 2012.

Boyd, David R. Unnatural Law: Rethinking Canadian Environmental Law and Policy. Vancouver: UBC, 2003.

Bradshaw, Anthony D. "Introduction and philosophy." In *Handbook of Ecological Restoration*. Vol. 1. Martin R. Perrow, and Anthony J. Davy, eds. Cambridge: Cambridge UP, 2002. 3-9.

Bradley, Bill. "Digging Through the Sudbury Soils Study," Northern Life. June 13, 2008. online: http://www.republicofmining.com/2008/06/13/digging-through-the-sudbury-soils-study-by-bill-bradley/. (accessed, May 5, 2014).

Bradley, Lara. "Cradle of Life," The Sudbury Star. Nov. 21, 2009. A1 and A6.

Cazdyn, Eric M. The Already Dead: The New Time of Politics, Culture, and Illness. Durham: Duke UP, 2012.

Clark, Bruce A. Justice in Paradise. Montreal, Qué.: McGill-Queen's University Press, 1999.

Cosgrove, Denis E. Social Formation and Symbolic Landscape. Madison, WI: University of Wisconsin, 1998.

Cronon, William ed. Uncommon Ground: Toward Reinventing Nature. New York: W.W. Norton, 1995.

Davies, M. C. R., ed. Land Reclamation: An End to Dereliction? London: Elsevier Applied Science, 1991.

DeStefano, Dick. "Sudbury: Ontario's mining superstore," *Sudbury Mining Solutions Journal*. May 2013. online: http://www.republicofmining.com/2013/05/22/sudbury-ontarios-mining-superstore-by-dick-destefano-sudbury-mining-solutions-journal-may-2013/#more-21425. (accessed April 25, 2014).

Ellsworth, Elizabeth and Jamie Kruse, eds. Making the Geologic Now: Responses the Material Conditions of Contemporary Life. Brooklyn, N.Y.: Punctum Books, 2013.

Eshun, Ekow. "Way of Curating by Hans Ulrich Obrist, book review: Entertaining explanantion of why curating is vital part of the arts today", *The Independent*. March 14, 2014. online: http://www.independent.co.uk/arts-entertainment/books/reviews/ways-of-curating-by-hans-ulrich-obrist-book-review-entertaining-explanation-of-why-curating-is-vital-part-of-the-arts-today-9189753.html (accessed May 30, 2014).

Freedman, Bill. Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses. San Diego: Academic, 1995

Gunn, John M. ed. Restoration and Recovery of an Industrial Region: Progress in Restoring the Smelter-Damaged Landscape near Sudbury, Canada. New York: Springer-Verlag, 1995.

Herzogenrath, Bernd ed. An [Un]likely Alliance: Thinking Environment[s] with Deleuze|Guattari. Newcastle upon Tyne, U.K.: Cambridge Scholars, 2008.

Heynen, Nik, Maria Kaika, and E. Swyngedouw, eds. In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism. London: Routledge, 2006.

Hirmer, Lisa. "Dirt Piles: collected thoughts on the landscape of construction," On Site Review. No. 26: Dirt,18-20. 2011.

Jelen, Jenny. "Sudbury's story, told by LU geography prof." *Northern Life*, May 18, 2013. http://www.northernlife.ca/news/localnews/2013/05/18-oiva!.aspx. (accessed May 12, 2014).

Jelen, Jelen. "A rock show on the rocks," *Northern Life*. Aug. 2, 2012. online: http://www.northernlife.ca/news/lifestyle/2012/08/02-rock-show-sudbury.aspx. (accessed 23 May 2014).

Kelly, Lindsay. "Sudbury among successes in study of downtowns," Northern Life. July 3, 2014. online: http://www.northernlife.ca/news/localNews/2014/07/03-northern-downtowns-sudbury.aspx. (accessed July, 2014).

Leadbeater, David, ed. Mining Town Crisis: Globalization, Labour and Resistance in Sudbury. Nova Scotia: Fernwood Publishing, 2008.

Lefebvre, Henri. Donald Nicholson-Smith, trans. The Production of Space. Oxford, OX, UK: Blackwell, 1991.

Lincoln, Bruce. Theorizing Myth: Narrative, Ideology, and Scholarship. Chicago: U of Chicago, 1999.

Lynch, Kevin. The Image of the City. Cambridge, MA: MIT, 1960.

MacDonald, Darren. "History retold through archives," *Northern Life*. May 3, 2012. online: http://www.northernlife.ca/news/localNews/2012/05/04-archive-opening-sudbury.aspx. (accessed, July 5, 2013).

MacDonald, Darren. "City councilors say marketing slogan could be a lot 'greater'," Northern Life. Jan. 29, 2014. online: http://www.northernlife.ca/news/localnews/2014/01/28-slogan-sudbury.aspx. (accessed April 20, 2014).

MacDonald, Darren. "Rebranding campaign unveiled at Downtown Sudbury AGM," *Northern Life*. Feb. 27, 2014. online: http://www.northernlife.ca/news/localNews/2014/02/27-downtown-rebranding-sudbury.aspx. (accessed April 20, 2014).

MacDonald, Darren. "Family discovers abandoned mine shaft in their backyard", Northern Life. July 15, 2014. online: http://www.northernlife.ca/news/localNews/2014/07/15-abandoned-mine-shaft-sudbury.aspx. (accessed July 2014).

Makovsky, Paul. "Game Changers|Mirko Zardini", Metropolis Magazine. Jan. 2012. http://www.metropolismag.com/January-2012/Game-Changers-Mirko-Zardini/. (accessed July 2014).

Meinig, Donald ed. The Interpretation of Ordinary Landscapes. Oxford: Oxford University Press, 1979.

Merchant, Carolyn. Reinventing Eden: The Fate of Nature in Western Culture. New York: Routledge, 2003.

Metzl, Jonathan M., and Anna Kirkland, eds. Against Health: How Health Became the New Morality. New York and London: NYU Press, 2010.

Mihell, Conor. "Mine Fields." In *On Nature*. Autumn 2008. 18-23, 42. online: http://www.ontarionature.org/protect/PDFs/Mining_A08.pdf. (accessed May 2014).

Misztal, Barbara A. Theories of Social Remembering. Maidenhead, Berkshire, England: Open UP, 2003.

Murphy, Scott. "Pollution Solutions," HK Magazine. May 18, 2006. online: http:// hk.asia-city.com/city-living/article/pollution-solutions. (accessed May 2014).

O'Block, Robert L. The 7 Steps to the Cure of Souls. Springfield, Missouri: The Society for The Cure of Souls, 2005.

Obrist, Hans Ulrich. Interviewed by Stuart Jeffries and Nancy Groves. "Hans Ulrich Obrist: the art of curation", *The Guardian*. March 23, 2014. online: http://www.theguardian.com/artanddesign/2014/mar/23/hans-ulrich-obrist-art-curator. (accessed June 2014).

Olwig, Kenneth R. "Representation and alienation in the political land-scape." In *Cultural Geographies* No.12. 2005. 19-40. online: http://www.ssoar.info/ssoar/bitstream/handle/document/23233/ssoar-cultgeo-2005-1-olwig-representation_and_alienation_in_the.pdf?sequence=1. (accessed May 2014).

Pearce, Fred. "True Nature: Revising Ideas on What is Pristine and Wild", Yale Environment 360. May 13, 2013. online: http://e360.yale.edu/feature/true_nature_revising_ideas_on_what_is_pristine_and_wild/2649/. (accessed June 2014).

Pickard, Arron. "Historian laments water tower demolition," *Northern Life*. Nov. 9, 2011. online: http://www.northernlife.ca/news/localNews/2011/11/10-water-tower-demo-sudbury.aspx. (accessed July 2014).

Pickard, Arron. "Regreening efforts taking root," *Northern Life*. Jan. 21, 2012. online: http://www.northernlife.ca/news/localNews/2012/01/21-regreening-efforts-sudbury.aspx. (accessed April 24, 2014).

Pletcher, Fred, and Sonia Molodecky. "Mining Report: First Nations consultation requirements challenge 'free entry'", Business Vancouver. Sept. 17, 2013. http://www.biv.com/article/20130917/BIV0108/309179966/-1/BIV/mining-report-first-nations-consultation-requirements-challenge. (accessed July 2014).

Robertson, David. Hard as the Rock Itself: Place and Identity in the American Mining Town. Boulder, CO: U of Colorado, 2006.

Ross, Nicola, Mike Grandmaison and Don Johnston. Healing the Landscape: Celebrating Sudbury's Reclamation

Story. Sudbury, Ont.: Vegetation Enhancement Technical Advisory Committee, 2001.

Saarinen, Oiva W. From Meteorite Impact to Constellation City: A Historical Geography of Greater Sudbury. Waterloo, Ont.: Wilfried Laurier University Press, 2013.

Saleh, Nico. (Marco Masetti, trans.) "Multiplicity and Memory: Talking About Architecture with Peter Zumthor", *Archdaily.* Nov. 2, 2010. online: http://www.archdaily.com/85656/multiplicity-and-memory-talking-about-architecture-with-peter-zumthor/. (accessed May 2014)

Soja, Edward W. Thirdspace: Journeys to Los Angeles and Other Real-and-imagined Places. Cambridge, MA: Blackwell, 1996.

Stradiotto, Laura. "'Mining Heroes' inspire Sudbury artist," *The Sudbury Star*. June 21, 2014. online: http://www.thesudburystar.com/2014/06/21/mining-heroes-inspire-sudbury-artist. (accessed 28 June 2014).

Stricker, Laura. "Mining legacy proves difficult to erase," *The Sudbury Star.* June 16, 2011. online: http://www.thesudburystar.com/2011/06/16/mining-legacy-proves-difficult-to-erase. (accessed 20 April, 2014).

Stricker, Laura. "Sudbury spends \$70,000 to rebrand city," *The Sudbury Star*. Jan. 28, 2014. online: http://www.thesudburystar.com/2014/01/28/sudbury-spends-70000-to-rebrand-city. (accessed April 20, 2014)

Stricker, Laura. "Councillors cool to new Sudbury slogan," *The Sudbury Star*. Jan. 29, 2014. online: http://www.thesudburystar.com/2014/01/29/councillors-cool-to-new-sudbury-slogan (accessed April 20, 2014)

Sudol, Stan. "He has one tough city to sell [Sudbury image]," *Globe and Mail*. July 15, 1998. online: http://www.republicofmining.com/2013/07/01/he-has-one-tough-city-to-sell-sudbury-image-by-stan-sudol-globe-and-mail-july-15-1998/. (accessed, April 24, 2014).

Sudol, Stan. "Sudbury Dumped on the Slag Heap of History," The Sudbury Star. Feb. 6, 2004. online: http://www.republicofmining.com/2013/07/01/sudbury-dumped-on-the-slag-heap-of-history-stan-sudol-originally-published-in-the-sudbury-star-february-6-2004/. (accessed March 2, 2013).

Sudol, Stan. "On the homefront: Sudbury basin vital to Allies during WWII," Canadian Mining Journal. Oct. 1, 2005. http://www.canadianminingjournal.com/news/on-the-homefront/1000199427/?&er=NA (accessed July, 2014).

Sudol, Stan. "Celebrating Northern Ontario's mining history," *The Sudbury Star*. May 30, 2014. online: http://www.thesudburystar.com/2014/05/30/accent-celebrating-northern-ontarios-mining-history. (accessed, June 2014)

Suzuki, David T. Earth Time: Essays. Toronto: Stoddart, 1998.

Turpin, Etienne. "Reflections on Stainlessness," FUSE Magazine. Jan. 16, 2012. online: http://fusemagazine.org/2012/01/35-1_turpin. (accessed April 2013).

Van Sluys, Shawn, Kenneth Hayes and Jocelyn Laurence, eds. Sudbury: Life in a Northern Town. Musagetes and Laurentian Architecture, 2011.

Wallace, Carl, and Ashley Thomson, eds. Sudbury: Rail Town to Regional Capital. Toronto: Dundurn, 1993.

Weizman, Eyal. "Political Plastic." In *Collapse: Philosophical Research and Development*. Robin Mackay, ed. Falmouth, U.K.: Urbanomic, 2010. 267-313. online: http://roundtable.kein.org/sites/newtable.kein.org/files/weizman_political%20plastic.pdf. (accessed May 2014).

Whitehouse, Mike. "Sudbury's sense of place will always be grounded in the Canadian Shield," *Globe and Mail.* Feb. 9, 1994. A20.

Whitehouse, Mike. "Historic Building facing demolition." *The Sudbury Star.* Jan. 8, 2010. online: http://www.thesudburystar.com/2010/01/08/historic-building-facing-demolition. (accessed June 2014).

Whitehouse, Mike. "Accent: Inside-out city," *The Sudbury Star*. July 30, 2011. online: http://www.thesudburystar.com/2011/07/30/accent-inside-out-city. (accessed April 25, 2014).

Wren, Christopher. Risk Assessment and Environmental Management: A Case Study in Sudbury, Ontario, Canada. Leiden, Netherlands: Maralte, 2012.

Zimmer, Ben. "The Long History of the Phrase 'Red Line'," Wall Street Journal. July 19, 2013. http://online.wsj.com/news/articles/SB10001424127887323993804578612210634238812?mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424127887323993804578612210634238812. html

Reports

Natural Resources Canada. <i>Mining-reliant Communities, 2001</i> . http://data.gc.ca/data/en/dataset/d365f780-8893-11e0-bbde-6cf049291510. (accessed April 2014).
Land Reclamation Program 2003 Annual Report. Economic Development and Planning Services. Dec. 2003. http://www.greatersudbury.ca/content/div_landreclamation/documents/land_and_rec_report2003. pdf. (accessed April 2014).
Natural Resources Canada, GeoAccess Division. "Land and freshwater area, by province and territory", 2005. http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/phys01-eng.htm.
Living Landscape: A Biodiversity Action Plan for Greater Sudbury. Greater Sudbury, Vale and Xstrata. Dec. 23, 2009. http://www.greatersudbury.ca/content/biodiversity/documents/Revised%20Biodiversity_Print_final_Dec09.pdf. (accessed March 20, 2014).
Sudbury Soils Study: Ecological Risk Assessment, March 2009. Guelph, Ont.: SARA Group, 2009. http://www.sudburysoilsstudy.com/EN/indexE.htm. (accessed May 2014).
5 Year Plan: Regreening Progam 2011-2015. Greater Sudbury and VETAC. Dec. 21, 2010. http://www.greatersudbury.ca/content/div_landreclamation/documents/5%20year%20plan%20-%20%20FINAL1.pdf. (accessed April 2014).
Statistics Canada, CANSIM, table 051-0001. Last modified 2013-11-25. http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm
Reclaiming our Urban Places: Greater Sudbury Brownfield Strategy and Community Improvement Plan. Greater Sudbury. September 2013. http://www.greatersudbury.ca/linkservid/BC874905-FD36-3989-E4A00284073C255B/showMeta/0/. (accessed January 2014).
Interim Green Space Advisory Panel Report. Greater Sudbury. 2013. http://www.greatersudbury.ca/linkservid/735D205A-BAC2-521F-C7ADE63B79FAFFC7/showMeta/0/. (accessed January 15, 2014)
2013 Sustainability Report. Vale. 2013. http://www.vale.com/EN/aboutvale/sustainability/links/LinksDownloadsDocuments/2013-Sustainability-report.pdf. (accessed May 2014).

Amiro, B.D., and G.M. Courtin. "Patterns of vegetation in the vicinity of an industrially disturbed ecosystem." Sudbury, Ont.: Can. J. Bot. 59: 1623-1639, 1981.

Burkhardt, Rike, Peter Rosenbluth and Julee Boan. "Mining in Ontario: A deeper look." Toronto, Ont.: Ontario Nature. online: http://www.ontarionature.org/discover/resources/PDFs/reports/mining-in-ontario-web.pdf. (accessed May 2014).

Gunn, John M. "Restoring the Smelter-Damaged Landscape near Sudbury, Canada." In *Restoration & Management Notes*. 14:2 Winter, 1996. 129-136. online: https://faculty.unlv.edu/abellas2/Restoration_course/Gunn%201996%20restoring%20Sudbury%20Ecol%20Rest.pdf. (accessed May 2014).

Lautenbach ,William E. ed. Land Reclamation Program 1978-1984. Sudbury, Ont.: VETAC, 1985. http://www.greatersudbury.ca/living/environmental-initiatives/regreening-program/reportspublications/

Struik, H. "Photo Interpretive Study to assess and evaluate the vegetational and physical state of the Sudbury area subject to industrial emissions". In *Sudbury Environmental Enhancement Programme Summary Report*, 1969-1973. Sudbury, Ont.: Department of Lands and Forests, 1973.

Winterhalder, Keith. "Environmental degradation and rehabilitation of the landscape around Sudbury, a major mining and smelting area." Environ. Rev. 4. 1996.

Online Content

Danyliw, Jon. "Sudbury." *Terra North/Nord*. Sudbury, Ont.: Poet Laureate. http://gspl-ezine.blogspot.ca/p/regreening-poems.html. (accessed April 2013).

Hollingsworth, Erin. "An Etymology of Green." *HowStuffWorks*. January 10, 2012. http://entertainment. howstuffworks.com/arts/literature/green-etymology.htm. (accessed May 20, 2014).

Monet, Stephen. "City Launches 'Thin Green Line' Contest Celebrating 25 years of Land Reclamation." Sep. 15, 2003. http://www.greatersudbury.ca/living/newsroom/newsreleases/city-launches-e28098thin-green-linee28099-contest-0d0acelebrating-25-years-of-land-reclamation/. (accessed May 2014).

Obrist, Hans Ulrich. "To curate." Edge. 2011. online: http://edge.org/response-detail/10227. (accessed May 2014).

Oxford Dictionary. http://www.oxforddictionaries.com/

Merriam Webster Dictionary. www.merriam-webster.com/dictionary

"Ontario Mining Act Fact Sheet." Canary Research Institute for Mining, Environment and Health. http://www.canaryinstitute.ca/publications/Ontario_Closure_Brochure.pdf.

"What happens to a mine after a mine is closed?" *Mining Facts*. Fraser Institute, 2012. http://www.miningfacts.org/environment/what-happens-to-mine-sites-after-a-mine-is-closed/. (accessed May 2014).

"What are abandoned mines?" *Mining Facts*. Fraser Institute, 2012. http://www.miningfacts.org/Environment/What-are-abandoned-mines/. (accessed May 2014).

"Phytoremediation: Using Plants to Clean Up Soils", *United States Department of Agriculture*. http://www.ars.usda.gov/is/ar/archive/jun00/soil0600.htm. (accessed June 2014).

SAMSSA, http://www.greatersudbury.ca/content/div_councilagendas/documents/samsaa_0927.pdf

"Air Pollutant Data." Ontario Ministry of the Environment and Climate Change. http://www.airqualityontario.com/history?/. (accessed July 2014).

"SO2 Monitoring." Greater Sudbury Air Quality. Vale Canada Ltd. http://www.airquality-sudbury-vale.com/environmental-activity/monitoring/index.asp. (accessed June 2014).

"Part II - Ecology: The Conversations". *The Ecology of an Art Scene*. Nov. 9, 2013. http://iso.canadianart.ca/microsites/paristoronto/events.php#part2. (accessed June 2014).

"Unnatural Law - About the Book." http://www.unnaturallaw.com/1aboutbook.htm. (accessed April 24, 2014).

"Greater Sudbury Blueberry Festival." www.blueberryfestival.ca. (accessed June 2014).

"Community," Vale Living With Lakes Centre. http://www3.laurentian.ca/livingwithlakes/community/. (accessed June 2014).

"City of Lakes: Lake Facts." Greater Sudbury. http://www.greatersudbury.ca/living/lakes-facts/. (accessed June 2014).

"Greater Sudbury Histories." Greater Sudbury Heritage Museums. http://www.sudburymuseums.ca/index.cfm?app=w_vmuseum&lang=en&currlD=1390&parlD=0. (accessed 12 May. 2014).

"Historical Highlights." Laurentian University. http://laurentian.ca/historical-highlights. (accessed July 2014).

"The Hilltops of Sudbury: A look at the development of Sudbury's hilltops." Greenspace Advisory Panel. Google Maps Engine. https://mapsengine.google.com/map/edit?mid=zKVVAzarGrsE.kcbOwQVYrHbM.

(accessed May 2014).

Sudbury Water Tower Redevelopment Project. http://www.sudburywatertower.com/. (accessed June 2014).

Radio Interviews

Quotations were transcribed from audio

Beckett, Peter. Interview by Erik White. "City of Sudbury wants polluted mining site remembered," CBC News Morning North. June 25, 2012. online: http://www.cbc.ca/player/Radio/Local+Shows/Ontario/Morning+North/ID/2249931323/?page=5. (accessed June 2014).

Craig, Doug. Interview by Kate Rutherford. "Sudbury's Welcome Centre not so welcoming anymore," *CBC New Morning North.* June 28, 2013. online: http://www.cbc.ca/morningnorth/past-episodes/2013/06/28/sudburys-welcome-centre-not-so-welcoming-anymore/. (accessed June 2014).

Ferrigan, Jason. "Greater Sudbury plans for some old abandoned mines," CBC News Morning North. Jun. 11, 2013. online: http://www.cbc.ca/player/Radio/Local+Shows/Ontario/Morning+North/ID/2390711087/?page=34. (accessed June 2014).

Henderson, Ron. Interview by Erik White, "Plans for new library and museum in downtown Sudbury", CBC News Morning North, Jan. 9, 2014. online: http://www.cbc.ca/morningnorth/past-episodes/2014/01/09/plans-for-new-library-and-museum-in-downtown-sudbury/ (accessed July 2014).

White, Erik. Interview by Markus Schwabe. "Preserving Sudbury's Hilltops," CBC News Morning North. Jan. 6, 2014. online: http://www.cbc.ca/morningnorth/past-episodes/2014/01/06/preserving-sudburys-hilltops/. (accessed July 2014).

Lecture

Cosgrove, Dennis E. "Landscape and Landschaft" (lecture delivered at the "Spatial Turn in History" Symposium, German Historical Institute, Feb 19, 2004). GHI Bulletin No. 35. P58.