

Turbotrain, Zerotrain, Ecotrain:
The Ecological Political Economies of High-Speed Rail in Canada

by

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ABSTRACT

Since the late 1980s Canadian proponents of high-speed rail (HSR) have increasingly appealed to the technology's sustainability potential to sell the idea to decision-makers. This thesis employs an ecological political economy (EPE) approach to examine this phenomenon. It considers when, how, and why high-speed rail became an 'ecological fix' – a neoliberal tactic, employed by states and capitalists in search of profit, wherein innovations are proposed as a means of externalizing and internalizing socio-environmental conditions. It demonstrates how this development in Canada's HSR story was shaped by the underlying transformation of 'neoliberalization', a process which in Canada was largely uneven, often contradictory, and featured various national idiosyncrasies. Three distinct ecological political economic narratives for HSR development are identified – 'Turbotrain', 'Zerotrain' and 'Ecotrain' – and these narratives are shown to have competed with one another for legitimacy since the 1960s, during periods of HSR 'emergence', 'impasse' and 'unanswered resurgence'. It is argued that HSR became an ecological fix after proponents repeatedly failed to convince decision-makers to invest in the transport infrastructure, a phenomenon that was backgrounded by 'roll-out' forms of neoliberalism and the attendant popularization of eco-modernist beliefs. However, considering Canada's two proposed HSR projects (in the Quebec City-Windsor and Calgary-Edmonton corridors) from an EPE perspective raises doubts about some of the grand claims and motivations underlying this ecological fix, and identifies a number of unintended impacts which could result from the introduction of HSR as a new mode within Canada's busiest transport corridors.

ACKNOWLEDGEMENTS

“Sometimes a scream is better than a thesis.”

- Ralph Waldo Emerson (2008, Vol.5: p.477; originally written in 1836).

“Puff, puff, chug, chug, went the Little Blue Engine. ‘I think I can – I think I can.’”

- *The Little Engine That Could* (Piper 1976, pp.33–34).

Although admittedly written in an entirely different context, Emerson’s famed adage in the epigraph above easily applies to the process of writing a doctoral thesis. Some examples of screaming come to mind: *I can’t handle this! Not another draft! Why is this taking so long!?! Am I making a meaningful contribution!?!* Luckily, while researching and writing this dissertation I have avoided the compulsion to scream thanks to an incredible amount of support, advice and inspiration I received from others – including those sage fictional characters in my two-year-old’s book collection. To these supports I am forever grateful (though it should go without saying that the following individuals are by no means responsible for any misguided assessments in the ensuing work):

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LIST OF ABBREVIATIONS

APT	Advanced Passenger Train
AVE	Alta Velocidad Española (Spanish High Speed)
BR	British Rail
CAC	Criteria Air Contaminant
CAF	Construcciones y Auxiliar de Ferrocarriles (Railway Builders)
CBA	Cost Benefit Analysis
CBC	Canadian Broadcasting Corporation
CEC	Calgary – Edmonton Corridor
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CPRA	Canada Petroleum Resources Act
CSR	Corporate Social Responsibility
CTC	Canadian Transport Commission
DB	Deutsche Bahn (German Railway Company)
DGES	Department of Geography and Environmental Studies
DHC	DeHavilland Canada
DMU	Diesel Multiple Units
EM	Ecological Modernization
EPE	Ecological Political Economy
FTA	Canada-United States Free Trade Agreement
FRA	Federal Railway Administration (U.S.)
G8	Group of Eight
G20	Group of Twenty
GDP	Gross Domestic Product
GEA	Green Energy Act
GHG	Greenhouse Gas
GM-EMD	General Motors Electro-Motive Division
HSGT	High-Speed Ground Transportation
HSR	High-Speed Rail
HST	High-Speed Train
ICE	Intercity Express
IFI	International Financial Institution
IMF	International Monetary Fund
IPE	Institute of Political Economy
IPE	International Political Economy
IUR	International Union of Railways
Kt	Kilotonne
Km/h	Kilometers per hour
LAV	Linea de Alta Velocidad (High-Speed Line)
LRC	Light, Rapid, Comfortable
LRT	Light Rail Transit
MLA	Member of Legislative Assembly
MLW	Montreal Locomotive Works

MNC	Multinational Corporation
MP	Member of Parliament
Mt	Megatonne
NAFTA	North American Free Trade Agreement
NATO	North Atlantic Treaty Organization
NDP	New Democratic Party
NEP	National Energy Program
NPV	Net Present Value
NTA	National Transportation Act
OQRTTF	Ontario-Québec Rapid Train Task Force
PC	Progressive Conservative
PPP	Public-Private Partnership
PQ	Parti Québécois
PR	Public Relations
QWC	Quebec City – Windsor Corridor
RENFE	Red Nacional de los Ferrocarriles Españoles (Spanish National Railways)
SCTIC	Standing Committee on Transport, Infrastructure and Communities
SGF	Société Générale du Financement du Québec (Québec Investment Agency)
SNCF	Société Nationale des Chemins de Fer Français (French National Railway Company)
STOL	Short Take Off and Landing
TEMS	Transportation Economics & Management Systems, Inc.
TGV	Train à Grande Vitesse
ToP	Treadmill of Production
TTC	Toronto Transit Commission
TWh	Terawatt Hour
UK	United Kingdom
UN	United Nations
US	United States
VHSR	Very High Speed Rail
WTO	World Trade Organization

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PROLOGUE:

The Trains Are Always Greener on the Other Side of the Pond

“The fact that the North American speed record was achieved almost half a century ago is a clear statement that the political leaders of this continent have lacked any sort of long-term vision as far as passenger transportation infrastructure is concerned. Politicians like to cut ribbons at staged media events. They aren’t willing to initiate major infrastructure projects that will be completed after they have left office, as this means their successors will cut the ribbons and bask in the glory.”

- Jason Shron, *TurboTrain: A Journey* (2007, p.39).

An American in Paris... On a High-Speed Train

In the morning of Monday, August 20th, 2012, an American living in Paris boarded the Train à Grande Vitesse (TGV) for the first leg of what would be a 1000 km, one-day business trip to Lyon and back. The American had such an enjoyable experience that by week’s end he would post a blog entry about it (see Schafran 2012) on *SustainableCitiesCollective.com*, a website that boasts works written by “the world’s best thinkers on the urban future”. Within, the American recounts how his first high-speed rail (HSR) journey “could not have been a simpler and more relaxing experience”. Not only was the train “comfortable enough to read Eric Charmes and Walter Mosely”, but it also kept passengers cool from the sweltering heat outside. The blog post features a photo of the American enjoying a beer en route, with the caption “not available in automobiles”. The American marvels how over three decades the TGV “has carried over a billion passengers, has never had a fatal accident, and has slowly grown in France and throughout Europe, with high-speed connections from French cities to their counterparts in Italy, Germany, England, Belgium and the Netherlands”. What is more, the train lines are interconnected with other modes “at every scale, from bike paths on up,” while transport planners “work to provide subsidies for students and other low-income people

to access the system at different points”. Thanks to these relatively affordable, efficient and integrated high-speed train systems, the American has experienced a voyage upon the epitomic mode of contemporary sustainable passenger transportation – the electric high-speed train (Schafran 2012).

Dreams of High-Speed Rail

North Americans on this side of the Atlantic accustomed to the relative snail’s pace of conventional rail are likely to look jealously upon the romantic image of HSR set out by the blogging American in Paris. “Wouldn’t it be nice...” – many have dreamed – “if there were only high-speed trains like the TGV in North America, thereby enabling us to avoid the airport security line-ups, or highway traffic, and the ever-growing expense of fossil fuel based transport modes, all while halving the typical travel times between major urban areas? Wouldn’t it be nice to be able to hop on a Westbound train ... say, in Ottawa, after work on a Friday and arrive in Toronto with enough time to enjoy the evening in that city?” These types of romanticized visions underlie a North American desire for bullet trains, as exemplified in the epigraph by Shron above. They also sparked my own interests in the topic of high-speed rail.

The transport technology has certainly been getting a lot of attention as of late, as major projects are currently underway in the United States, in Great Britain, and in China, among dozens of other nations. In Canada, a great deal of buzz surrounded the 2011 release of a tri-partite study between the governments of Ontario, Québec and Canada (EcoTrain 2011) which found that a high-speed train between Toronto and Montreal would be commercially viable. Then in 2013, the Alberta Legislature decided to review the feasibility of an HSR line between Calgary and Edmonton, stirring speculation

in the news media about the potential for major investment on a “transformative project” that could act as “a springboard to prosperity” (Calgary Herald 2014).

As acclaimed environmentalist George Monbiot once asked in an op-ed for *The Guardian* (2010), “what’s not to like about high-speed rail?” Not only do bullet trains offer the promise of easy connectivity in densely populated regions of the world, they also apparently serve as an environmentally friendly alternative to automobiles and airplanes in a world where oil dependency and climate change are (increasingly) high-priority concerns. As Samuelson writes, “it has become fashionable to think that high-speed trains connecting major cities will help ‘save the planet’” (Samuelson 2010, 48). As the ensuing dissertation demonstrates, this sentiment has caught on in Canada. The re-imagining of high-speed rail as a ‘sustainable’ enterprise in particular has become an integral part of proponents’ marketing package to sell the idea to the broader public and to decision-makers.

Of course, the present decrepit state of passenger rail in Canada goes a long way towards selling the idea of HSR as well: Today proponents of HSR shudder upon the mental comparison of the TGV and conventional passenger rail services provided by the federal crown corporation VIA Rail. Anyone who has ridden the train in Canada is familiar with the (tragically comical) way in which trains must ‘pull over’ on a siding to give right-of-way to passing freight trains.* For those who frequently travel within Canada’s busiest transportation corridors – in particular the Québec City-Windsor Corridor (QWC) or the Calgary-Edmonton Corridor (CEC) – the idea of new, sleek,

* This is because the freight companies own the tracks.

electrically-powered bullet trains is likely appealing, as reflected in the fact that a majority of Canadians are in favour of government investment in HSR (Nanos Research & Railway Association of Canada 2008; Graves 2009).

My early interests in using high-speed rail as a case study for ecological political economy stemmed from my own dreams of being able to travel on European-style high-speed trains in Canada *while simultaneously* playing a role in reducing my own socio-ecological footprint. The summer before beginning my doctoral studies I completed an internship at the Canadian Labour Congress, where I wrote a report on the role of HSR and public transit investments in facilitating Canada's transition to a 'green economy' (Katz-Rosene 2011). Yet while undertaking that study and in subsequent years I always felt a niggling sense of unease about the simplicity of the sustainable bullet train argument – the idea that HSR is *inevitably* 'good for the environment' while *also* providing a host of social and economic benefits. The argument seemed to lack important contextual dimensions – like how new HSR infrastructure might change regional mobility dimensions; or the different outcomes one might expect if HSR was included within a governmental demand management strategy for intercity transport featuring incremental improvements for VIA Rail; or whether the enormous energy costs required to build HSR systems and generate their electricity might negate any energy efficiencies gained from having a new electric transport mode. These contextual questions, and others like them, eventually found their way into the critical approach to the case study that unfolds in the chapters ahead.

Context Matters!

Shedding some light on the broader macro-structural questions surrounding HSR and contextualizing the underlying political economic history of the technology in Canada is something that I believe will benefit Canadians. Thus far there has been little public thought in this regard: The most recent feasibility studies in both the CEC and QWC (EcoTrain 2011; TEMS* & Oliver Wyman 2008; Shirocca Consulting & Anthony Steadman & Associates 2011) have reported favourably on the long term social, ecological and economic benefits of HSR investments, yet as some have pointed out (see Flyvbjerg et al. 2003; or Soberman 1995), feasibility studies of this sort often suffer from a form of tunnel vision in which the decision to go ahead with the project becomes the ‘raison d’être’ for the study in the first place. There is good reason to think critically about how the context(s) in which HSR lines would find themselves ultimately shape their social, ecological and economic potential. As de Rus and Nombela have written, the “development benefits of HSR investments are context-specific and the spatial location effects ambiguous” (2007, p. 4). Unfortunately, the nuanced debate that such findings demand is largely absent in a Canadian context.

Yet clearly the historical, political and economic contexts which served as a foundation for the high-speed trains in France that were so dearly loved by the blogging American are specific to France’s historico-geographical and national political economic setting; these contexts can not be exported to the QWC and CEC as easily as the material infrastructural pieces (the trains and the technological know-how). For instance, in

* Transportation Economics & Management Systems Inc. typically goes by its acronym, TEMS. The latter acronym is used hereafter.

France both the conventional and high-speed rail networks are run by the state-owned Société Nationale des Chemins de fer Français (SNCF), while in Canada recent feasibility studies of the CEC and QWC imply that new HSR lines would likely be operated by private firms, and are unclear about the future fate of VIA. Similarly, the vast majority of electricity produced in France (used to power the trains) is generated through nuclear energy, and also owned and operated by the state (see World Nuclear Association 2013), whereas in Canada the electricity mix varies greatly by province, with combustion of coal still playing an important role in Alberta (Canadian Electricity Association 2013). This says little of the nearly incomparable population densities between France and Canada (see Chapter Three), or the totally different regional and urban spatial layouts and capacities for intermodal transfers (a legacy of such different development trajectories historically), or fundamentally different climates, etc.

This is not to say that good lessons cannot be learned from France (or other HSR-consuming nations for that matter). Rather, the point is that ‘high-speed rail’ is not the universal, monolithic, transferable technology that the die-hard HSR romantics seem to suggest. Different histories, different geographies, and different political economic contexts will ultimately shape the experience of high-speed rail in the QWC or CEC. Yet while some of these factors (such as the history and the existing physical geography) are to a certain extent fixed in the past, others (like the underlying political economic context) are more malleable. For these reasons this author finds HSR an ideal case study of ecological political economy (EPE).

A More Fulfilling Alternative?

And so it is that an entire dissertation has been produced about an infrastructure which does not exist! Yet given the likelihood of future proposals for HSR, it is essential that we continue to consider the implications, the true costs and benefits and the way that the underlying context shapes such costs. Of course, not everyone likes the idea of HSR in Canada (see, for example, Palda 1995; Bunting 1998; Milke 2012; Navarro-Genie & Heinrichs 2012). If the political debates around pending HSR projects in the USA and Britain offer any indication (Hornyak 2013; Gutierrez 2013; The Economist 2013b) it is probable that opinions about HSR would become much more polarized in Canada than they are presently if such projects somehow did move beyond the hypothetical stage and decision-makers approved expenditures for the next phase of development.

While the blogging American in Paris may return to the US to find he *can* experience HSR service in various corridors (the Northeast Corridor* and soon in California's Central Valley Corridor), a Canadian blogger would find that no genuine rail modernization effort is underway.† Yet perhaps, as this thesis questions, the lack of HSR may not be the tragic historical narrative of Canada's 'backwardness' that many claim it to be (for instance, see Paulsen 2009a). Perhaps – with some thought and attention into Canada's political economic context and contemporary mobility relations – the nation may be poised to make the best of an opportunity to confront the broad impacts of

* Thanks to Amtrak's Acela Express service which runs from Washington, D.C. and Boston.

† At the time of writing (fall 2014), the recently-elected Ontario provincial government had announced plans to undertake an environmental assessment for a 300 km/h electric train between London and Toronto that would be built within a decade (CBC News 2014d). Yet for reasons that are made clear in the ensuing thesis, history would caution that the project is unlikely to move forward once a full cost-benefit assessment is completed.

unsustainable transportation *and* improve intercity relationships without incurring the high costs (broadly defined) of paying for and building a new transport megaproject. Perhaps, as Whitelegg has suggested regarding the planned HS2 in Britain (Whitelegg 2009), there are ways to use this level of government spending far more productively *if the main goals* really are producing a more sustainable economy and reducing the nation's carbon footprint. Perhaps by focusing on changing domestic mobility relations, or incrementally introducing *higher speed rail*, or refocusing our attention on reducing the impacts of the existing dominant modes, we can achieve the same intended benefits without paying the high price tag of new HST lines. All of these latter options may not be as glamorous as HSR, but perhaps they offer cheaper, lower impact, and more genuinely sustainable alternatives?

**PART I:
BRIDGING HIGH-SPEED RAIL AND
ECOLOGICAL POLITICAL ECONOMY**

CHAPTER ONE

Introduction

“We are calling on all parties to agree that Canada will benefit environmentally, socially and economically from investing in high-speed rail on major corridors across the country.”

- Green Party Leader Elizabeth May (quoted in Green & Wu 2011).

“High-speed rail... is the only infrastructure fix that promises to speed the velocity of moving people, goods, and ideas while also expanding and intensifying our development patterns. If the government is truly looking for a shovel-ready infrastructure project to invest in that will create short-term jobs across the country while laying a foundation for lasting prosperity, high-speed rail works perfectly.”

- Richard Florida (2010).

“Investment in high speed rail (HSR) infrastructure is being supported by governments and supranational agencies with the declared aim of working for a more sustainable transport system.”

- Ginés de Rus (2009, p.26).

Research Problematique

As showcased in the epigraphs above, the idea of high-speed rail (HSR) has become popularly conferred with social, environmental and economic benefits. In Canada, a ‘sustainability argument’ of this nature first emerged in the late 1980s, yet it became increasingly important during the first decade of the 21st Century as a primary rationale used by proponents to sell the idea to decision-makers. For some, bullet trains were proposed as an integral component of a future ‘green economy’ (see, for instance, Jackson 2009) – a sustainable economy which presumably continues to see economic growth while using significantly less fossil fuel energy than at present. While HSR has been proposed and debated, the technology has never been truly introduced in the

nation's two most suitable corridors – the Calgary–Edmonton Corridor (CEC) and the Québec City–Windsor Corridor (QWC).

Despite the lack of HSR (or perhaps *because* of it), the technology's presumed socio-ecological and economic potential continued to gain popularity after the turn of the Century. According to a 2009 poll, a significant majority of Canadians (81%) felt that HSR development had the capacity to strengthen the economy through job creation, while 78% also believed that it would significantly reduce greenhouse gas (GHG) emissions (Graves 2009). Many political leaders from a variety of jurisdictions and political parties would contribute to this notion. For instance, Vancouver Mayor Gregor Robertson pronounced in 2010 that the technology would “help get more vehicles off the road” (Vancouver Observer 2010), and in 2011 the NDP's former leader, Jack Layton, publicly expressed interest in HSR as an environmental infrastructure (CTV News 2011b).^{*} While Québec City's mayor Régis Labeaume would refer to HSR as part of “a national vision” (CTV News 2011a), former Liberal Party leader Michael Ignatieff claimed in his 2009 book *True Patriot Love* that “if we want to be nation builders, we would start on [HSR projects] right now” (Ignatieff 2009, pp.167–68). Even some political leaders who publicly expressed hesitation about HSR investment because of the large capital costs have signaled their belief that the technology could help reduce GHG emissions through the diversion of automobile and air traffic. This includes Moe Amery, the Progressive Conservative Member of the Legislative Assembly (MLA) in Alberta

^{*} Pro-HSR sentiments would continue to be expressed by a number of NDP Members of Parliament [most notably Windsor West Member of Parliament Brian Masse in his ‘Need for Speed Campaign’ (Layson 2011; Clarkson 2012)].

who chaired a 2013-14 legislative committee review of the CEC project (Breakenridge 2013), and Dean Del Mastro, the Conservative Member of Parliament (MP) who chaired an all-party rail caucus that looked into HSR in the QWC in 2007 (see Visser 2010). Finally, as suggested by the name of the consortium which conducted a 2011 feasibility study of the QWC (the ‘EcoTrain Consortium’)*, HSR’s ‘environmental potential’ specifically would be invoked as a way to compel investment for this type of transportation infrastructure.

In the lexicon of ecological political economy (EPE), HSR’s presumed identity as a mode of sustainable transportation qualifies it as an ‘ecological fix’. As Bakker has written, the concept “refers to strategies of externalization and internalization of socioenvironmental conditions, in search of profit, both by states and capitalists” (Bakker 2009, p.1782). This thesis employs an EPE approach to historicize and critically evaluate this phenomenon by asking when, how, and why HSR became an ecological fix. The ensuing chapters demonstrate how the sustainable bullet train construct can be framed in these terms – it is a conceptualized project through which “fractions of capital” or “state bodies [propose] neoliberal environmental measures to solve problems... within the wider economy and society” (to use Castree’s description of “environmental fixes”; see Castree 2008, p.146). HSR proponents claim that the technology could help confront two concurrent societal problems – economic stagnation and socio-ecological degradation – through an array of associated ‘benefits’ (see Table 1A).

* The consortium consisted of Dessau, MMM Group, KPMG, Wilbur Smith & Associates and Deutsche Bahn International. As explained below, I have named one of the leading narratives about HSR development in Canada after the EcoTrain consortium, although I use slightly different spellings to differentiate between them. I use ‘Ecotrain’ to refer to the narrative, and ‘EcoTrain’ to refer to the consortium.

Table 1A: A Portrait of the ‘Sustainable Bullet Train’

- Reduces the amount of short haul flights;
- Relieves national dependence on oil (a non-renewable resource);
- Provides an affordable intercity travel option in the event of rising oil prices;
- Offers a more comfortable and accessible alternative to air travel;
- Offers a more reliable form of intercity transport during bad winter weather;
- Alleviates highway congestion;
- Reduces air pollution;
- Improves public safety by reducing highway accidents;
- Reduces the polity’s emission of greenhouse gases (tackling climate change);
- Satiates a high level of public support for quicker passenger rail;
- Increases ties between the nation’s largest metropolitan areas;
- Puts Canada on par with other industrialized nations;
- Stimulates various economic sectors (manufacturing, energy, transport, etc.);
- Spurs new research, development and investment in domestic firms;
- Creates ‘good green jobs’.

Source: Developed by author.

The following chapters examine how this narrative came about in Canada by considering how proponents’ arguments for HSR development and rail modernization have evolved over a period of five decades. They further explain how and why the sustainable bullet train construct became more integral to the popular framing of HSR – starting in the late 1980s, but then becoming a much more significant part of HSR’s marketing package after the turn of the Century. Certainly the growing popular attention towards ‘sustainability’ and energy efficiency in the 1980s helped raise initial awareness about the broader ecological footprint of fossil-fuel based transportation (Black & Nijkamp 2002), yet it is quite something else for a single transport mode to assume a popular (some might say ‘mythic’) identity as a comprehensive solution to a structural problem such as ‘unsustainability’, particularly in a society which has no such infrastructure, and which would have to invest significant sums of money to bring such projects to life. As de Rus (2009) has written, there are numerous countries where this identity is being used to justify major capital expenditures in HSR infrastructure. Given

the supreme importance of the sustainability argument for contemporary HSR proponents, as well as the real material issues involved in Canada's great HSR debate – including anthropogenic climate change, smog, highway and airport congestion, and the state's financial stability – the HSR-as-eco-fix phenomenon and its implications are worthy of closer scrutiny.

Why Canada's HSR Story Matters

Theoretical critiques of 'sustainability' aside (see, for instance, Redclift 1989; Norgaard 1994; or Swyngedouw 2007), the term is commonly defined as a triumvirate of environmental, social and economic wellbeing, or a 'triple bottom line' (Castro 2004). This triumvirate also applies to sustainable transportation, as seen in the federal government's definition of the latter as a transport "system that integrates and balances social, economic and environmental objectives" (Transport Canada 2011). The comprehensive list of social, ecological and economic 'benefits' of HSR development expressed by proponents therefore offers an indication of the sustainability potential inherent to the technology. If the keenest advocates are correct, by failing to invest in HSR Canada risks becoming a technological backwater, frozen in a former epoch of railway development, trailing behind the rest of the industrialized and industrializing world. Economically, the nation will miss out on billions of dollars of investment into two major infrastructural projects, which according to some economists (for instance, Jackson 2009; Bataille et al. 2009) would create significant numbers of 'green jobs' for Canadians and serve to prime the pump of domestic growth. Socially, the lack of HSR means enormous missed potential for higher degrees of connectivity between a majority of Canada's largest cities. It also means that gas-guzzling, accident-causing, congestion-

inducing modes – automobiles and airplanes – will continue to serve as the primary means of passenger transport between the nation’s major urban areas. In turn, this means higher costs in terms of health care (from highway accidents and respiratory problems brought on from smog), lost productivity, and the need for oil imports (at least in Eastern Canada). Here the interconnections between the proposed social, economic and ecological benefits are revealed, since high fossil fuel consumption as a result of current trends within Canada’s transportation sector results in the emission of greenhouse gases (GHGs) and criteria air contaminants (CACs) which are detrimental both to the biogeochemical cycles of the planet and human health, therefore exacting a severe economic toll on future generations (National Roundtable on the Environment and the Economy 2011).

However, the proponents may have overstated their case, or be altogether wrong! If that is the case, then Canada faces another set of risks: From this point of view, a decision to invest in HSR could result in cost overruns and increasing government debt, a disgruntled polity disappointed that precious taxpayer funds have been misallocated, and even continued high rates of fossil fuel energy consumption (which as noted above carries with it additional layers of social, ecological and economic costs). Some of these symptoms of project failure have already been exhibited in the United Kingdom and California in the 21st Century, where governments have advanced to subsequent phases of new bullet train development plans, only to face growing opposition (The Economist 2013b; Hornyak 2013). Further, if investments are made in the QWC and/or the CEC and the modal shifts expected by proponents do not occur, the new rail lines could theoretically cascade into a “vicious circle” (Vuchic 1984) where transport demand is too

low to cover operation and maintenance costs, service quality declines, and people are further compelled to continue using their cars (or airplanes) to get from one city to another. In this scenario HSR would be a major failure in terms of contributing to a sustainable society. All this is to say – as contradictory as it may sound – that there is a tremendous amount to *gain* from HSR investment, as much as a tremendous amount to *lose* from continuing along the current path of postponing HSR development, while at the same time there may be a tremendous amount to *lose* from sinking billions of dollars into HSR infrastructure (and thus much to be *gained* from using those funds in a different manner)! It is this dialectic between the potential benefits and costs – broadly defined beyond their simplistic econometric meanings – that makes HSR development an important topic for Canada today.

Hypotheses and Arguments

Both Bakker (2009) and Castree (2008) note that an ecological fix is an explicitly *neoliberal* tactic. As Harvey (2005) defines it, ‘neoliberalism’ is at its core “a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade” (p.2). This thesis thus locates the emergence of the sustainable bullet train construct within the underlying political economic transformation of ‘neoliberalization’ (Peck & Tickell 2002; Brenner et al. 2010). Using the story of HSR development as a case study, the thesis shows how in Canada this political economic transformation was a largely uneven and often contradictory process, riddled with various national idiosyncrasies. The original imagining of modern, high-speed trains within the QWC and CEC emerged

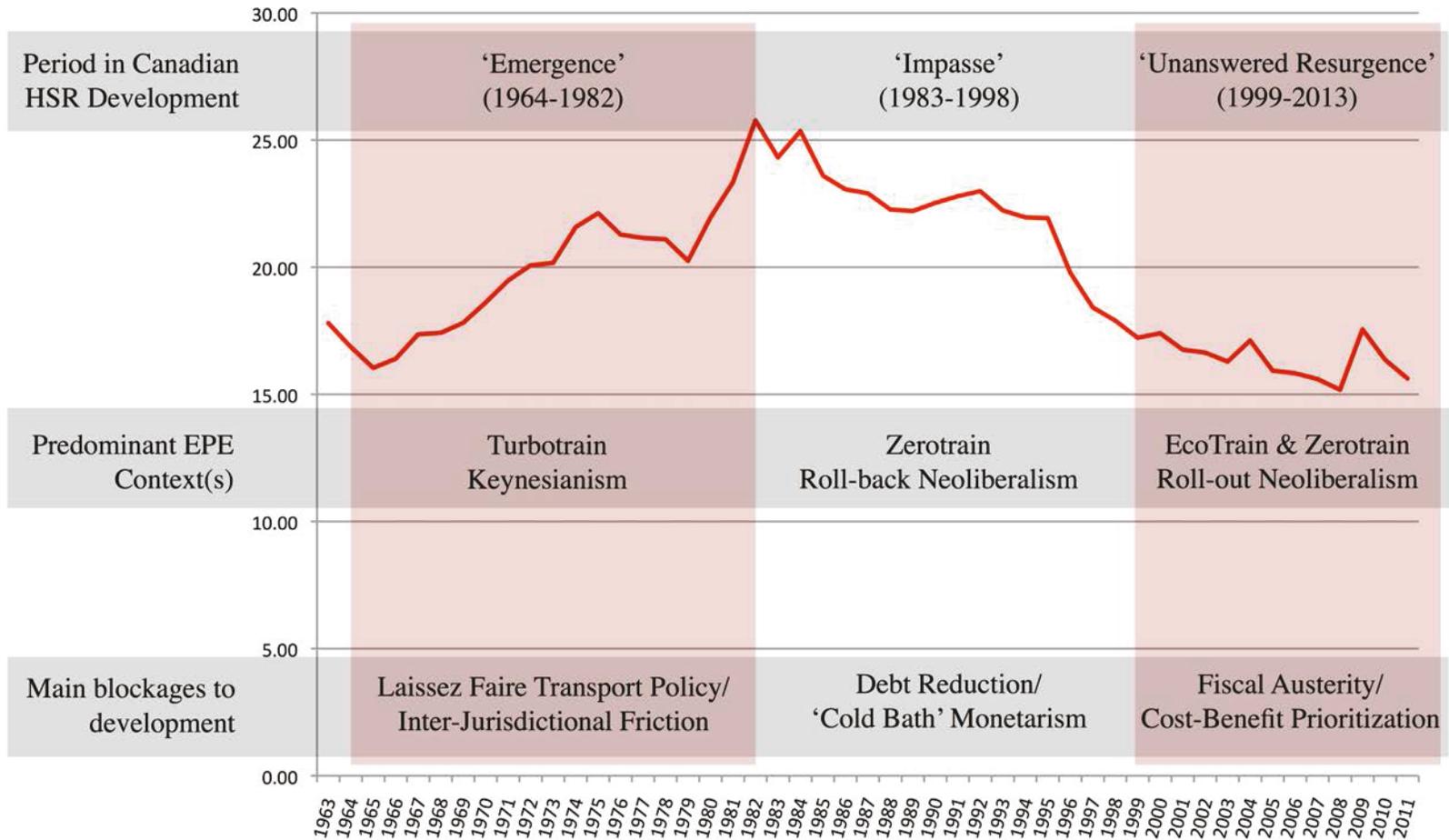
within a pre-neoliberal ‘Keynesian’ context, wherein the state held a guiding role in the development process. As Hirsch writes, Keynesianism was an anti-*laissez-faire* creed in which the “market economy [was] tempered by state correctives applied at limited points” (1976, p.128). However, in Canada, uncharacteristically *laissez-faire* policies were expressed within the transportation sector during the later Keynesian period, and this had the counter-effect of limiting the state’s involvement in HSR development during the late 1960s and throughout the 1970s. ‘Roll-back’ neoliberal reforms (Peck & Tickell 2002) within the implicated provincial and federal governments throughout the late 1980s and 1990s then further locked HSR development into a period of impasse. After repeatedly failing to convince decision-makers to invest in projects, proponents increasingly turned to the technology’s sustainability potential as a selling point for public-private co-investment, a phenomenon that was backgrounded by ‘roll-out’ forms of neoliberalism and the attendant popularization of eco-modernist beliefs throughout the first decade of the 21st Century. Nevertheless, the idiosyncrasies of Canadian neoliberalism (in particular the continued dominance of a politics of austerity seen within the capitals of Alberta, Québec, Ontario, and Canada during the roll-out period, as well as the conflicted political dynamics expressed between these jurisdictions) meant that calls for HSR went largely unanswered. In this sense, the history of HSR’s evolving popular identity over the decades is tied to its continued postponement, and furthermore, this history was closely conditioned by underlying political economic transformations.

Canada’s HSR development story can therefore be partitioned into three main periods: First, there was a period of ‘emergence’, between roughly 1964 and 1982, in which the federal government actively pursued and engaged in the development of high-

speed trains. Second, there was a period of ‘impasse’, between roughly 1983 and 1998, when decision-makers repeatedly backed away from the high capital costs of HSR infrastructure development. Third, there was a contradictory period of ‘unanswered resurgence’ from roughly 1999 to 2013, during which the idea of HSR saw renewed popular attention and promotion as a project of ‘sustainable transportation’, yet which ultimately saw proponents fail to persuade state authorities to invest the required capital and enact the necessary regulations to bring the projects to life. As Figure 1A demonstrates using the federal government’s annual expenditures (as a percentage of gross domestic product) as a key indicator of the state’s evolving willingness to invest in the economy, the evolution of political economic beliefs (particularly regarding the ‘appropriate’ relationship between the state and the market) correlates with these periods (which are the focus of the historical core of this thesis, or Part Two).

In addition to identifying the main blockages to HSR development featured during each period, Figure 1A also makes note of the predominant ecological political economic narratives regarding HSR at the time. I identify three such narratives for Canadian HSR projects – which I label ‘Turbotrain’, ‘Ecotrain’ and ‘ZeroTRAIN’. Each of these narratives is espoused by an assemblage of interest groups and actors who make claims about how high-speed rail plans *ought* to be carried out (or *ought not* to be carried out, in the case of the ZeroTRAIN narrative). While each storyline has a temporal dimension (in the sense of having held a period of relative subjective dominance over other narratives), it is important to note that they are not consecutive or teleological.

Figure 1A: Three Periods of HSR Development and the State’s Willingness to Invest in the Economy (indicated by federal government expenditures as a percentage of GDP)



Sources: GDP and federal expenditure data compiled from Statistics Canada (2012) and Garcete (2013).

Differences between these narratives can be subtle, but their consequences significant: the TurboTrain narrative – named after the high-speed TurboTrain* technology used by Canadian National and then VIA Rail from 1968 to 1982 – expects HSR to take shape in the form of a public service made available by a state-owned enterprise in a context where transport demand is tacitly influenced through various means of state regulation for the purposes of yielding domestically-oriented social and economic benefits. The ZeroTrain narrative, while compelled by the technological capacities of HSTs, expresses the sentiment that *public* HSR investment would be an inappropriate use of taxpayer dollars as well as an inappropriate intervention within transport markets. Finally, the EcoTrain narrative – named after the corporate consortium† commissioned in 2008 to prepare a commercial feasibility study for HSR in the Québec City-Windsor Corridor (EcoTrain 2011) – usually advances the position that HSR should take shape in the form of a privately-operated service financed by a joint public-private investment, as a means of generating what is presumed to be ‘environmentally sustainable’ economic growth. These HSR narratives are, roughly speaking, consistent with the political economic philosophies of Keynesianism, roll-back neoliberalism, and roll-out neoliberalism respectively, with some exceptions (as detailed in Chapter Four). The categorization of different HSR narratives and their underlying political economic foundations is helpful in demonstrating the wide array of beliefs regarding HSR

* To differentiate between the TurboTrain narrative and the actual ‘TurboTrain’ technology (often called the ‘Turbos’), I use the one-word, no-caps version as the name of the narrative.

† To differentiate between the EcoTrain narrative and the ‘EcoTrain’ consortium, I use the one-word, no-caps spelling for the narrative.

development, and in showing the nuances involved in the evolution of HSR development through time and space in Canada.

The Danger in Eco-Fixes

A core argument made by this thesis relates to the implications of HSR becoming an ecological fix. As noted above, because of its presumed high occupancy ratios, electric powering and competitive travel times, HSR is proposed as a technology which could get cars off the road and reduce the amount of short haul flights in high volume corridors, thereby reducing fossil fuel consumption and its associated impacts (air pollution, highway congestion, vehicle fatalities, and in particular, anthropogenic climate change). The incorporation of eco-modernist beliefs (hereafter Ecological Modernization, or EM) within neoliberalism (McCarthy & Prudham 2004) – in particular its combination with roll-out (Peck & Tickell 2007) variants of neoliberal thought – has played an important part in the emergence of this particular HSR narrative by carving out a conceptual space in which an initial capital investment for a Public-Private Partnership (PPP) is seen as a politically acceptable way of carrying out a bullet train project, as it is believed such investment could play a role in generating ‘green growth’ and new opportunities for capital accumulation, all while reducing the political and financial risks of the states involved. However, the problem with such eco-fixes, notes Swyngedouw (2010), is that they facilitate a business-as-usual mentality which allows polities to believe they are effecting social and ecological change when the primary outcome, in practice, is merely the consolidation of capitalist processes – meaning that the true socio-ecological ‘impacts’ are often unwittingly externalized, or sometimes negated by new nodes of generated economic activity. In this light, the political economic history of HSR

development in Canada suggests that the emergence of the sustainable bullet train construct can be framed foremost as a type of marketing imagery, an ideal type which has been leveraged by various actors seeking profit-generating arrangements between the state and the market in the transport sector through investment in HSR infrastructure. This does not necessarily mean that there are no merits whatsoever to the specific social, ecological, or economic claims made about HSR. Rather, by framing HSR as an ecological fix this thesis intends to unpack the underlying motives of the sustainable bullet train construct and highlight the conditionality involved in the technology's true socio-ecological impacts – a critical stance which has yet to be effectively articulated in discussions of HSR in Canada. Revealing these underlying motives does suggest the need to be cautious about the extended list of claimed benefits of HSR. While the claims made about a reduced ecological footprint within the QWC are more compelling than those in the CEC (mostly by virtue of higher forecasted diverted demand and 'greener' electricity generation in the Eastern corridor), an EPE approach nevertheless cautions Canadians about the ecological contradictions involved in the neoliberal model of HSR development, especially given its underlying motivation of economic expansion. This discussion is further elaborated in Chapter Eight.

The 'Muddiness' of Political Economy: Battling for 'Legitimacy'

A corresponding argument made in the following chapters has to do with the nature and character of political economic change. Despite the relatively clean split between the periods of HSR development depicted in Figure 1A above, it is important to note that these periods merely mark broad characteristic shifts in the underlying political economy and outcomes in Canada's HSR development story; in practice the material process of

change was much muddier and highly uneven. In some instances the historical outcomes contradicted what would be expected from the political economic theory. Scholars speak in general terms about a global shift toward ‘neoliberalism’ (Harvey 2005), or even a specific ‘neoliberal turn’ in Canada (Brownlee 2005; Albo 2007; Enoch 2007); At a general level of abstraction this concept is fair in the sense that it merely characterizes the way that – broadly speaking – many provincial and federal governments have since the mid 1980s increasingly embraced market-oriented policies, private property relations and free trade. However, in delving into the inner workings of Canadian political economic spaces in more specific terms through a particular case study one quickly encounters the uneven and contradictory nature of neoliberalism. For instance, on one hand neoliberalization has yielded conditions in which many government decision-makers have been unwilling to invest public funds on large infrastructure projects, as spending-averse politicians tend to avoid large multi-generational expenditures (of which HSR certainly qualifies). On the other hand, the privatization and commercialization of transportation markets as part of the process of neoliberalization has also created a conceptual space in which large infrastructure spending has been legitimized in some circumstances – as exemplified in the “Building Canada” stimulus investments as part of the federal government’s 2009 Economic Action Plan (Government of Canada 2014). While some (see, for instance, Minn 2013) portray such investments as ‘Keynesian’ moments of intervention – or legacies of counter-cyclical spending policies which were more popular in the early Post-War decades – a growing literature on the ‘varieties of neoliberalism’ (see Peck & Tickell 2002; Keil 2009; Brenner et al. 2010) interprets contemporary HSR investment as a qualitatively distinct type of spending which falls

under the broader rubric of neoliberalism. The case study of HSR thus offers some credence to the work of critical geographers and political economists (such as Peck & Tickell 2002; Keil 2009; Brenner et al. 2010) who have pointed out that there is not *one* monolithic neoliberalism but rather different forms and expressions of the political economic creed which sometimes appear to incorporate their ‘others’:

“The topographical complexity of the neoliberalized landscape has become, if anything, more pronounced. Neoliberal impulses and imperatives have become increasingly widespread and, in many contexts, normalized. But everywhere they are enmeshed, blended and imbricated with other forms of governance; nowhere does neoliberalism exist in ‘pure’ form, since the contradictory project of market making is necessarily dependent on auxiliary and ‘external’ sources of support and regulation” (Peck & Tickell 2007, p.31).

The historical evolution of thought regarding HSR thus confirms this muddy interpretation of political economic spaces and transformations – not only as it relates to neoliberalism, but other conventionally universally-interpreted terms like ‘Keynesianism’ as well. The latter is often described – in conjunction with nationally-oriented Fordist relations of production and state-directed welfare regimes – as the predominant political economic ideology which *preceded* ‘neoliberalism’ (Harvey 2005; Peck & Tickell 2007; Patomäki 2009). Again, because of the high degree of state involvement and public expenditure typically required for HSR development, HSR projects have often been defined as a “Keynesian response” to contemporary societal problems (Minn 2013, p.189), yet this label seems to contradict the numerous cases of so-called ‘neoliberal governments’ (in Europe and Asia) investing billions of public dollars in bullet train projects, let alone the major growth of interest in HSR during the ‘neoliberal era’. In contrast, if indeed neoliberalism is a project through which the state necessarily always “prioritizes capital accumulation over all else” (as Cimorelli 2009 describes it), then it is

not clear why neoliberal governments in Canada would have continually declined to leverage the powers of the state to pursue private or partly-private bullet train projects when commercial feasibility studies repeatedly pointed to profit-generating and growth-creating opportunities long ago. Similarly, explications of HSR lines as necessarily ‘Keynesian’ projects do not account for the political and economic obstacles faced by HSR development efforts in the 1960s and 1970s in Canada. The material and subjective stories of Canadian HSR development thus shed light on the uneven and often contradictory nature of neoliberalism and Keynesianism, as well as the “idiosyncratic” dimensions of the political economic process of neoliberalization as it occurred in Canada because of its distinct geographical context. For instance, writing in 1994, Norcliffe identified how Canada’s integration into the global economy and the transformation of its labour markets and productive relations along ‘neoliberal’ lines (although he did not use that term) resulted in “a distinctive Canadian regime of accumulation” which reflected its geography and history as a (relatively) sparsely-populated nation whose economy was largely reliant on the export of staple resources. This thesis thus offers further examination of how Keynesianism and neoliberalism materialized in unexpected ways in Canada.

In this sense the ensuing thesis makes claims about Canada’s political economic evolution at two levels of abstraction. First, at a *general* level of abstraction it shows how Canada has undergone a transition *from* a specific form of capitalism known as ‘Keynesianism’ *to* another known as ‘neoliberalism’. As Harvey claims, the shift to a neoliberal world order – a “revolutionary turning point in the world’s social and economic history” (Harvey 2005, p.1) – began with just a few important changes in the

capitals of China, the United States, and Great Britain in the late 1970s:* “From these several epicentres, revolutionary impulses seemingly spread and reverberated to remake the world around us in a totally different image” (Ibid.). To a certain degree the neoliberal turn in Canada followed in the wake of these global shifts, as Gattinger and St. Pierre explain: “In Canada, the adoption of neoliberalism followed upon its appearance internationally, and it is often associated with the federal government of Brian Mulroney (who undertook vast deregulation and privatization initiatives as well as public-sector layoffs) and the provincial governments of Ralph Klein (Alberta) and Mike Harris (Ontario)” (Gattinger & St. Pierre 2010, p.283). A number of key moments thus stand out at the federal and provincial government levels in shifting the nation’s political economy towards its current neoliberal formation, as further discussed in Part Two.

However, when considered at a more specific level of abstraction, it is clear that this transition has come about through complex, uneven, and multi-scalar processes, which is to say that neoliberalization took place in variegated ways in local, regional, federal and global spaces (Brenner et al. 2010). At this more specific level of abstraction it no longer makes sense to speak about (the singular) ‘neoliberalism’ in Canada given the great variety of interpretations and outcomes witnessed within and between the nation’s political economic spaces over time (Keil 2009), nor does it make sense to infer a singular monolithic ‘Keynesianism’. Like the varieties of neoliberalism, most iterations of Keynesianism were concerned with advancing human well-being, albeit through

* This included the liberalization of the Chinese economy in 1978, the adoption of hard-line monetarism by the US Federal Reserve in 1979, and the coming to power of anti-inflation, anti-union leaders in Great Britain and the United States – Margaret Thatcher in 1979 and Ronald Reagan in 1980, respectively.

“aggressive government action” aiming to stabilize the economy through counter-cyclical spending, taxation, and the regulation of monetary and fiscal policy and by tackling unemployment (see Blinder 2008). The two political economic categories are further disambiguated by the scale of their geographical focus; Keynesian-Fordist models of accumulation were typically oriented along national lines (with the intention of supporting and growing domestic mass markets), while neoliberal models typically opened up domestic economies to global exchange and international regulatory and trade regimes (Sparke 2013).

Given the muddiness involved in political economic transformation, and the contradictions between neoliberalism in theory and “actually existing neoliberalism” in practice (Brenner & Theodore 2002) – and one might add between Keynesianism and ‘actually existing Keynesianism’, this thesis therefore advocates a dynamic interpretation of political economic change. It views Canada’s political economic evolution (and discussions regarding the feasibility of HSR development specifically) as the historical result of a complex ‘battle of ideas’ (to use the Gramscian term, in a similar fashion as that used by Hall 1986; 1988; and 2011). This battle involves the interplay and intermeshing of a variety of different political economic beliefs which compete with each other for the title of ‘common sense’, or ‘legitimacy’ (as Davidson & Gismondi 2011 see it). As these scholars claim, “legitimacy is tied not just to the stability of authority structures but also to the ideologies themselves that states inevitably serve to endorse, and the particular projects that embody those ideologies” (p.7). The study of the processes through which legitimacy is formed and contested therefore must closely consider not only the material terrain of the political economic landscape, but the subjective (or

‘discursive’) realm as well. Interpreting the political economic landscape in this way helps to explain the fluidities and uneven character of political economic change throughout time and in different spaces within Canada, by identifying the practical nuances within the core ideological visions of state-market relations. Similarly, closer analysis of the discourses and narratives of HSR shows how there exist a great variety of different underlying assumptions about the ‘optimal’ political economic conditions for the development of this technology, sets of assumptions which vie for legitimacy within Canadian political economic spaces. These sets of assumptions are themselves diverse, complex and muddy, and thus offer a practical case study which supports the theoretical work of critical scholars who have problematized universal and monolithic portraits of neoliberalism (Peck & Tickell 2002; Leitner et al. 2007; Heynen et al. 2007; Keil 2009; Peck 2010), by showing how the neoliberal structure itself is the result of a similar battle for legitimacy between various actors, agents and forces.

A Note on Theory and Method

As indicated above, the thesis employs an EPE approach to interrogate how Canada’s unfolding political economy has shaped the nation’s high-speed rail story. In the simplest terms ecological political economy is just like what it sounds: The term ‘ecological’ is the adjective prefix, denoting the focus on questions of systemic society-nature relations. In turn, the suffix ‘political economy’ is laden with a normative claim that the study of economic matters (including finance, investment, costs, benefits, and capital) is incomplete without attention to the political themes of power, wealth, ideology, authority and social thought (all of which intimately shape how economic matters unfold and are interpreted). While a ‘political economy of the environment’ was originally

conceptualized in the early 1970s by scholars who sought to find more fruitful ways of incorporating environmental impacts within traditional cost-benefit equations of infrastructure developments (see collection of essays edited by Sachs 1972b), the EPE framework has evolved considerably since then. Today EPE can be interpreted not solely as a field of study, but additionally as an *approach* used by practitioners of many disciplines – including political ecologists, environmental geographers, environmental historians, environmental sociologists, and ecological economists, among others – to help contextualize questions of import in the study of society-nature relations. Scholars employing EPE tend to view questions of ecology as inseparable from the political economic context, and vice versa (Harvey 1993). In a similar vein, they tend to see ‘nature’ as a largely ‘social’ manifestation (Castree & Braun 2001). It is from this theoretical lens that I approach the research questions outlined above regarding Canadian high-speed rail development.

One other way of confronting the recent history of HSR development in Canada would be through a framework of rationality and power in policy studies (Flyvbjerg 1998), and specifically how the proposed HSR developments in the QWC and CEC fit into a larger pattern seen around the world in which governments, private capital and other institutions have increasingly turned to megaprojects as a means of ‘reducing friction’ in society (Flyvbjerg et al. 2003). While the ensuing thesis borrows aspects of Flyvbjergian analysis – in particular its critical explication of the “performance paradox” seen in infrastructure projects – it adopts a slightly different tack which prioritizes the political economic context (as opposed to the formation of rationality) in its assessment of how certain narratives, and in particular the discursive contest between them, have

resulted in the present situation in Canada, wherein a long history of efforts to bring HSR projects to fruition have repeatedly failed.

As introduced above, there are three broadly desired ecological political economic contexts for Canadian HSR projects – Turbotrain, Ecotrain, and Zerotrain. These three narratives can be said to be backed by respective ‘discourse coalitions’ (Hajer 1993). By closely analyzing the claims and statements about HSR made by various actors or agents (i.e. transport policy organizations, think tanks, governmental agencies, experts and intellectuals, transportation firms, unions, political parties, political leaders, etc.) either in publicized materials or informal documents or organized interviews, I have been able to characterize the broad assumptions and political economic claims made by each HSR narrative and affiliated discourse coalitions. Thus, an important methodological component of the thesis has been to collect data to help categorize the various narratives and their corresponding discourse coalitions as accurately as possible. A multitude of methods have been used for these purposes, including historical and comparative analysis, a four year media scan, in-depth interviews, statistical compilation, and discursive analysis. These various ecological political economic narratives were then used to frame a historical discussion about high-speed rail development in Canada and the underlying evolution of the nation’s political economy.

This dissertation is thus a work of social science, written by a ‘human geographer’. As such, it examines the topic at hand from a disciplinary vantage point which is broadly “concerned with the way place, space and environment are both the condition and in part the consequence of human activities” (Gregory 2009a, p.350). In the simplest terms the study examines the dialectic between geographical contexts and the

particular spatial outcomes of the (HSR) case study. Yet ‘geography’ here is defined very broadly: Despite falling within the broader disciplinary boundaries of (capital ‘G’) Geography, the ensuing work is transdisciplinary in its emphatic consideration of the social, ecological, political, economic, historical, cultural and technical dimensions of Canada’s HSR story. Thus the thesis meanders between numerous geographical realms – intentionally avoiding being confined to just one of – environmental geography, political geography, economic geography, historical geography, social geography, transport geography, cultural geography, and critical geography. Its commitment to EPE as a theoretical and methodological approach is in part a recognition of the way that contemporary “ ‘theory’ has itself become interdisciplinary, even post-disciplinary, and [how] the same authors and texts, motifs and themes recur across the spectrum of the humanities and social sciences, while any critical theory worthy of the name cannot draw back when it encounters disciplinary boundaries” (Gregory 2009a, p.352).

While I have collected a mix of qualitative and quantitative data, the nature of analysis is mostly of the former type. As such the study is both theoretical and empirical, though not *empiricist* in the sense of approaching the topic from a ‘positivist’ framework (Gregory 2000). For instance, while I do closely review the claims made in feasibility studies about the economic, ecological and social impacts of HSR development, and while I include some analysis of the numbers and figures provided in reevaluating the purported impacts of HSR development, my aim is not to offer a re-compilation of the raw data offered up in prior technical studies. My ‘purpose’ in carrying out this work is to raise some deeper philosophical questions about human-environment relations while contextualizing and answering more explicit questions about the impacts and outcomes of

Canada's HSR story and political economy, in the process contributing to a dialogue about this specific type of transport infrastructure development in contemporary Canada.

Situating the Research

There exists a great deal of literature on the core themes of this dissertation – high-speed rail, ecological political economy, and neoliberalization. This dissertation aims to respond and contribute to these literatures and draw connections between them. While these literatures are more fully introduced within the ensuing chapters, and the overall contributions of the thesis are elaborated at the conclusion of the dissertation, I offer a brief note of introduction here to situate the research:

Variegated Neoliberalism(s) in Canada

As Peck has shown, the use of the term 'neoliberalism' in the social-sciences has grown exponentially since first taking off in the mid 1990s (Peck 2010, p.13). Much ink has been spilled describing various aspects of the political economic mantra, including its essence and history, or its function as a contested, variegated 'process' (Peck & Tickell 2002; Harvey 2005; Brenner et al. 2010). Further, a number of works have broadly discussed the neoliberalization of Canada's political economy (for example, Carroll 1989; Brownlee 2005; Albo 2007; Enoch 2007); others focusing on neoliberalism within specific Canadian economic sectors such as transport (Socialist Project 2013; Keil & Young 2008) or energy (Laxer et al. 2005; Teelucksingh & Poland 2011), or within environmental policy (Keil 2007; McCarthy & Prudham 2004; Prudham 2004), or urban and regional development (Keil 2002; Brenner & Theodore 2002; Keil 2009). Despite these insightful analyses, a key problem with the term is that it is often used in a cursory way without adequate depth or critical reflection about what is really meant by the term,

or its many faces and evolutionary character. Boas and Gans-Morse (2009) claim that a vast amount of the literature on neoliberalism fails to adequately define the nuances and inherent contradictions within neoliberalism, such that the term has now “become a conceptual trash heap capable of accommodating multiple distasteful phenomena without much argument as to whether one or the other component really belongs” (2009, p.156). Thus, Peck and Tickell’s call in 2002 for more critical analyses and case studies on the specificities of neoliberalism in various spaces is still relevant today. As they argued at the time, “critical analyses do have the virtue of underscoring the inescapably *political* character of the globalization project and the hegemonic position of neoliberalism in global agencies and discourses. However, there is more to be done, both theoretically and empirically, on the specification and exploration of different processes of neoliberalization” (Peck & Tickell 2002, 383, emphasis in original). In short, there is room in the literature of neoliberalism to consider various spatio-temporal scales within which ‘neoliberalization’ has taken place in Canada, and to relate these shifts to a material case study such as high-speed rail development (which has yet to be done). This dissertation attempts to respond to this critique within the literature by taking the time to discuss in depth and detail what is meant by the term and how the various spaces which influence the case study are shaped by the tenets of this particular political economic philosophy, with attention to how neoliberalism has evolved in Canada over time. In this sense, a more ‘ecological’ interpretation of Canada’s political economy is in order (see Catton 1994) – one which sees not a static system, but rather a system in constant flux, with dynamic interaction and competition between a diversity of conceptual entities. Like the human species itself, the political economic doctrine of neoliberalism has since its

conceptual origins migrated into new spaces, in the process continuing to evolve, shift, and diversify – a dynamic which this thesis hopes to demonstrate using a Canadian case study.

The Literature of Ecological Political Economy

EPE is identified above as a transdisciplinary approach to social science used to help contextualize questions of import in the study of society-nature relations. In its ‘normative’ dimensions (Barnes 2009; Harvey 1974), much of the literature of EPE advocates social and structural change as a means of achieving more harmonious and just socio-ecological relations, as proscribed in both grand, idealistic visions of large-scale transformations (Kovel 2002; Foster 2009) as well as more pragmatic assessments of how to acquire ‘buy in’ or ‘legitimacy’ amongst decision-makers (Barry 2007; Dryzek 1996). By confronting the case study of HSR through both a pragmatic and structural critique, I aim to respond to this particular divide in the literature regarding the place and function of normativity in EPE. I do so by offering both a more nuanced definition of EPE as well as a modeling of EPE in practice. In characterizing EPE as an *approach* to society-nature relations, and in applying this approach to the case study of Canadian HSR development, the thesis traverses uncharted territory within the literature. While at first glance it may seem bizarre to approach the historical unfolding of HSR in Canada from the lenses of EPE, there is nevertheless a justification for this method: EPE writings have hitherto tended to focus on the abstract theoretical relationships between forms of social organization and more ‘traditional’ formats of nature – for example, the human use of natural resources or the despoliation of life-sustaining natural systems (see, for example, Heynen et al. 2007; or Foster 2009). Yet this format tends to belie the common

proposition of EPE that the ‘social’ is inherently ‘ecological’ and vice-versa. Scholars within the EPE fold have been instrumental in propagating radically new understandings of what constitutes ‘nature’ (McKibben 1989; Harvey 1993; Cronon 1995; Castree 2001b), and thus it is worth pushing our conceptual boundaries further to consider how such novel understandings of the society-nature nexus might influence the scope of the theoretical enterprise of EPE in its practical (case study) dimensions. This thesis thus challenges readers to think of HSR as a ‘socio-ecological’ entity in terms of the way its introduction within populated transport corridors would inevitably influence both societal and environmental realms. Further, it posits that different political economic foundations for an infrastructural project such as HSR can profoundly shape its socio-ecological outcomes. And so, as the following chapters propose, HSR offers a novel case study for further development of EPE theory, and in turn, EPE offers an appropriate lens through which to interpret HSR’s historical experience and its socio-ecological potential. One need look no further than the conceptual space bullet trains occupy within contemporary notions of sustainability (for instance, Jehanno et al. 2011; Lee et al. 2012) to see the applicability of analyzing HSR from a combination of socio-ecological and politico-economic foundations. The ensuing work thus responds to the EPE literature through modeling and redefining the approach, using the concept of the ecological fix in the broader discussion of sustainable transportation and through the specific case study of high-speed rail development in Canada.

High-Speed Rail and Transport Geography

High-speed rail development is discussed in a number of different contexts within the scholarly literature, a considerable portion of which can be located within the field of

transport geography. This literature tends to focus on questions of impacts, and it tends to do so from a more technical, quantitative vantage point: Scholars have sought to determine the environmental impacts of HSR as an alternative transport mode (Chang & Kendall 2011; Åkerman 2011; Westin & Kågeson 2012); the economic impacts of HSR development within industrialized societies (Nash 2009; Tierney 2012; de Rus 2009); as well as the expected changes in transportation flows or transport networks caused by the introduction of HSR (Levinson 2012; Johnson 2012). The technical nature of this research is not altogether surprising; the field of transport geography has long been criticized for lack of consideration towards “socio-economic and political repercussions” (Rimmer 1978, pp.80–81; Hanson & Kwan 2008). Emerging in the 1940s and 1950s from studies in economic geography, transport geography tended to be very technical from the beginning, focusing on network configurations and usually offering up descriptions of the commodities carried by various modes (Eliot Hurst 1974; Rodrigue et al. 2009). Transport geography played an important role in the so-called ‘Quantitative Revolution’ in Geography, since many early quantitative methods which emphasized ‘spatial interaction’ were introduced through case studies of transportation, and since some leading quantitative thinkers – such as Edward Ullman – labeled themselves as ‘transport geographers’ (Hanson & Kwan 2008). Nevertheless, the field took up an interest in transport ‘sustainability’ in the 1990s (Black 2003, p.8; Whitelegg 1993), and at that time discussions of HSR became more commonplace in the academic field of transport geography, though still often from a quantitative perspective (an important exception here is the edited collection by Whitelegg et al. 1993, which takes a more historical and descriptive approach to HSR development worldwide).

After 2000 transport geography experienced a large amount of introspection. In 2002, Hanson would write of transport geography as a “quiet, some might say moribund, corner of our discipline” (469), and by 2006, she would ask geographers to “reimagine” the centrality of transport in geography writ large (Hanson 2006). Keeling (2007) further problematized recent works in the field for “frequently tak[ing] an a priori approach to the relationship between transportation and socio-economic change. Transportation is treated so obviously fundamental to society that there is no need to explain how or why,” (219) and thus concludes that “the challenge for transportation geographers... is to define a set of theories and concepts about the spatial relationships between people and places that situate accessibility and mobility at the nucleus of human interaction” (Ibid.). Insofar as this thesis enters into the realm of transport geography, it attempts to answer Keeling’s call for greater theoretical attention to mobility in society, as well as Hanson and Kwan’s call for more ‘critical’ studies in the field (Hanson & Kwan 2008). It does so by approaching the case study from a mostly qualitative and critical framework that focuses on contextualization within the realm of ideas, including attention to the historical evolution of different political economic discourses regarding HSR development. In short, this thesis responds to the transport geography literature by advocating the merits of a qualitative, discourse and ideas-oriented approach when studying the phenomenon of HSR development.

As suggested above, one area where the technical literature focusing on high-speed rail has been particularly strong has been its multi-faceted assessment of impacts. While in some cases the focus has been ‘global’, or on HSR’s *general* impacts (see, for instance, Whitelegg & Holzapfel 1993; de Rus & Nombela 2007; de Rus 2009, Westin &

Kågeson 2012), it has just as often focused on a European context (for instance, Åkerman 2011; Miyoshi & Givoni 2012). In terms of North American assessments of HSR's potential impacts, the academic studies have almost entirely focused on the United States (for instance, Levinson 2012; Tierney 2012; Johnson 2012), with a key exception found in Perl, who takes a broader approach to HSR throughout North America (Perl 2002; 2013). Two important works which explicitly confront the political economy of high-speed rail development (Minn 2013; Albalade and Bel 2012) and which emphasize the point (as I do) that the conditions underlying HSR development ultimately shape the social, environmental and economic impacts of projects, are focused on the policy implications in other nations – in particular the U.S., Europe and Asia. There is therefore a considerable gap in the academic literature of HSR's impacts within a specifically Canadian context. In this regard, this thesis draws connections between the transport geography literature and the feasibility studies literature in Canada, by 'repatriating' the broader macro-level approach to HSR's impacts to a Canadian context. While many commercial feasibility studies have used positivist methodologies to envision a space for HSR within a future sustainable transportation system in Canada (EcoTrain 2011; Van Horne Institute 2004, 2011; TEMS & Oliver Wyman 2008), pointing to relative environmental gains in drawing passengers away from expected growth in automobile and airplane travel, the academic literature tends to portray environmental impacts as the principal *downside* to HSR development, at least in cases abroad (Kågeson 2009; Miyoshi & Givoni 2012; Nash 1991; Whitelegg & Holzapfel 1993). Thus, by drawing from the macro-scale analysis seen in some of the transport geography literature and

applying it to Canadian feasibility studies, the thesis aims to add new dimensions to the literature of HSR's expected impacts in Canada.

Chapter Outline

A brief outline of the work is in order. Part One of the thesis is introductory, and attempts to bridge the two core themes of high-speed rail and ecological political economy. This first chapter has situated the thesis within broader literatures and introduced the research agenda and core arguments. Chapter Two turns to theory and methodology. It describes the field of EPE, offers a more nuanced definition of EPE as a dialectical 'approach' to society-nature relations, and identifies how this approach has guided the methodological program used to complete this thesis. Chapter Three introduces the case study of HSR by offering a short primer on the technology of HSR and the specific corridors in which HSR has been most closely examined. Chapter Four categorizes and characterizes the three main narratives of HSR development in Canada and their respective proponent discourse coalitions.

Part Two of the thesis delves into Canada's political economic transformation as well as the evolution of HSR development (focusing in Canada, but including key insights from global developments as well). In terms of the political economic history, the three chapters within Part Two take a critical look at the concept of the 'neoliberal turn'. This transformation is considered at both general and specific levels of abstraction, on one hand characterizing broader global-scale shifts in the interpreted relationship between the state and markets, and on the other hand historicizing the more variegated and unique political economic changes within the spaces in which HSR has been proposed – the CEC and the QWC. The unfolding story throughout Chapters Five

through Seven demonstrates how the nation's contemporary political economic landscape is the outcome of a subjective 'battle of ideas', similar in form to that regarding high-speed rail development. This battle is far more nuanced than simply a contest between Keynesianism and neoliberalism or between different political party platforms, but rather – confirming the theorizations of critical political economists (particularly Peck & Tickell 2002; Peck & Tickell 2007; Peck 2010; Brenner et al. 2010) – that 'neoliberalization' has been a highly variegated process resulting from a battle for legitimacy, taking shape in unique ways within numerous different spaces and times.

In terms of the specific history of high-speed rail development in Canada, this second part of the thesis shows how the result of the discursive battle for legitimacy has thus far seen the repeated postponing of project development as more state investment-worthy brands of neoliberalism have held dominant within the spaces governing the CEC and QWC. Chapters Five through Seven thus locate the origins of the sustainable bullet train construct within the political economic process of neoliberalization and its attendant growth of eco-modernist understandings of technological innovation and economic growth. These chapters thus show how the motivations for investing in HSR have changed over the decades, with the sustainability argument playing a much larger role in selling HSR in the early 21st Century than in preceding decades.

Part Three of the thesis offers conclusions about HSR's identity as an ecological fix and the history of the technology's development in Canada. Chapter Eight considers Canada's two proposed HSR projects from a macro-structural scale, in the process raising doubts about the ecological claims made by proponents, and further cautioning Canadians about the likelihood of unintended impacts. Chapter Nine offers concluding reflections on

the current status and direction of Canada's HSR debate, highlights the broader philosophical questions raised by the case study and summarizes the dissertation's broader contributions – to the scholarly community, to the field of EPE, and to Canadian policy debates. My hope is that this document and the arguments within may help contextualize the debate about HSR and contribute to a broader discussion about the interrelationships between transportation, sustainability, society, and political economy. Specifically, I aim to demonstrate how HSR's presumed sustainability potential is largely a social construction that is historically rooted in the underlying contexts which have conditioned the nation's HSR development efforts. What is needed in the policy debates about Canadian HSR – both in popular and academic circles – is a more nuanced understanding of the conditionality involved in the 'socio-ecological potential' of this technology. I now turn to the theoretical and methodological frameworks that have been used to carry out the research.

CHAPTER TWO

Theoretical Foundations and Methodological Approach

All ecological projects (and arguments) are simultaneously political-economic projects (and arguments) and vice versa.
- David Harvey (1993, 25).

Introduction

In a 1993 article highlighting the dialectical relationship between social and environmental change, Harvey captured a core principle of ecological political economy (EPE), noted in the epigraph above. He would go on to identify “the sheer necessity of always taking the duality of social and ecological change seriously” (Harvey 1993, p.26). The problem he identified at the time, in the wake of the growing popularization of ‘sustainable development’ thanks to the release of the Brundtland Commission’s report six years prior (World Commission on Environment and Development 1987), was that “the ‘environmental issue’ necessarily mean[t] such different things to different people” while simultaneously the belief in sustainability became so widely espoused, that any publicly stated concern for ‘the environment’ or ‘sustainability’ could be employed as a cover for any variety of political economic motivations. This problem continues to serve as the primary analytical target of EPE, making it an ideal approach to study the political economic motivations underlying various socio-ecological claims about an infrastructural project such as high-speed rail. This chapter defines EPE more thoroughly, showing how it is a transdisciplinary and dialectical approach to socio-natural relations that adopts a macro-structural level of analysis to normatively expose socio-ecological externalities and locate opportunities for ‘socio-ecological sustainability’ (differentiated from traditional ‘sustainability’ by its inherently political and structural foundations; see

Swyngedouw 2007). The chapter further explains how EPE has shaped the process of scoping out a research question and the methods deemed worthy of answering it.

Defining EPE

An appropriate starting point for a definition of EPE is to acknowledge the very serious material thresholds reached by the global environment and the role of humans in producing this crisis. As the United Nations Environment Program argues, human civilization finds itself at a critical juncture as a result of its own historical actions: “Several critical global, regional and local thresholds are close or have been exceeded. Once these have been passed, abrupt and possibly irreversible changes to the life-support functions of the planet are likely to occur, with significant implications for human well-being” (UNEP 2012, 8). Given that human activity has become a geological force (Steffen et al. 2007), and given that many of the biogeochemical systems upon which humans (and every other species) rely for sustenance are threatened by unprecedented anthropogenic change (Steffen et al. 2011), there is arguably much to be gained from thinking about society-nature relations in novel ways.

Mainstream approaches to human-environment relations have been criticized for their inability to consider the *structural* causes of degradation and their failure to conceive of new socio-ecological arrangements (Blühdorn & Welsh 2008; Swyngedouw 2007; Keil 2007). For such critics, the ‘global environmental crisis’ as it came to be identified in the 1970s (see, for example, Meadows et al. 1972; or Singh 1976), has only gotten worse. It is no coincidence, such critics claim, that the exacerbation of global ecological degradation has occurred during an era which was characterized by the resurgence of *laissez-faire* economics (Barry & Eckersley 2005). Part of the problem, as

Harvey suggests (2005, 172-175), is that as a result of new forms of neoliberal governance, the environment has been increasingly subjected to “short-term contractual logic” wherein economic gains are prioritized at the expense of long term socio-ecologically sustainable arrangements. Another part of the problem, as discussed in further detail below, involves the fusing of neoliberalism and modern environmentalism, such that “neoliberalism may be understood as a distinctly environmental project” (McCarthy & Prudham 2004, p.276); the latter has given rise to discourses of ‘ecological modernization’ (or EM; see Mol & Spaargaren 2009) and ‘Prometheanism’ (as labeled by Dryzek 2013) – two environmental subjectivities that see capitalist expansion and profitability working in concert with ‘sustainability’.* EM and Prometheanism have been used by governments to justify market-based approaches to sustainable development.† Both generally adhere to the principle that market pricing mechanisms and the natural fluctuations of demand and supply inevitably promote greener behaviour; that “industrialization, technological development, economic growth, and capitalism are not only potentially compatible with ecological sustainability but also may be key drivers of environmental reform” (York & Rosa 2003, p.274).

In contrast, scholars from a host of related fields and disciplines have proposed thinking about questions of society-nature relations in *political economic* terms in order

* The main problems with this notion are twofold: 1) It fails to account for the numerous instances in which processes related to economic growth clearly result in environmental damage (such as in cases of ‘withdrawals’ of natural resources from the environment or ‘additions’ of contaminants to ecological systems; Schnaiberg 1980); and 2) it fails to consider how processes of economic growth are often accompanied by environmental impacts which are ‘displaced’ to other spaces and times (O’Connor 1991).

† A key difference between Promethean and EM approaches to neoliberal sustainable development is that the latter requires a more active state response (following the idea the growth can and must be made green through the retooling and reregulation of markets).

to confront the *structural* roots of socio-ecological degradation. This includes scholars who have self-identified with the research program of an ‘ecological political economy’ (EPE), or some similar iteration* (see, for example, Sachs 1972; Dryzek 1996; M’Gonigle & Gale 2000; Boyce 2002; Barry 2007; Meadowcroft 2005; Jennings 2010; and Rudel et al. 2011), as well as a host of other scholars within related fields who, like Harvey, never specifically self-identified with the EPE label but who nevertheless have framed their analyses of society-nature relations in this way, as seen in the fields of ‘political ecology’ (as characterized in Heynen et al. 2007), ‘environmental sociology’ (see Gould et al. 2008), ‘environmental history’ (see Worster 1987), ‘ecological economics’ (see Daly 1996; or McKibben 2007), or ‘environmental geography’ (for example, Castree et al. 2009), among other fields. In one of the seminal articles on EPE, Dryzek explains how the label “covers work concerned with the structure, organization and operation of political-economic systems (that is, mechanisms for making collective choices) as they confront environmental problems” (Dryzek 1996, 27) – a body of works which inevitably transcends formal academic disciplinary boundaries by virtue of the variety of perspectives through which this type of analysis is typically conducted.

Given such disciplinary transcendence, EPE can be interpreted as a transdisciplinary approach used throughout the social sciences. Although the use of EPE in these diverse fields will inevitably be coloured by disciplinary presuppositions (see Harrison & Livingstone 1980), EPE approaches do draw a common thread in the way

* Various combinations include ‘green political economy’ (Barry 2007), ‘environmental political economy’ (Dryzek 1996), or ‘the political economy of the environment’ (Boyce 2002), among others. While there are nuances in these different approaches their focus on society-nature relations and their emphasis of political economic structures as causal forces is largely the same between them.

they implicitly factor in political economic assumptions within their methods of analyzing the environment or implicitly make assertions about ‘favourable’ (in the eyes of the author in question) political economic conditions for improving society-nature relations – which as the epigraph at the outset of this chapter suggests – takes place far more commonly than we typically think. This ‘normative’ tendency (Barnes 2009) in EPE has some ancestry within the canon of critical international political economy, or critical IPE (Tooze & May 2002; Cox 1986), sometimes referred to as ‘the British School’ (despite the prominence of Canadian scholars influencing the latter; see Cohen 2008) which has emphasized the integrality (and inescapability) of normativity in political economic analyses. For instance, Susan Strange would often conclude her writings by asking – as Lenin often did – “what is to be done?” (Tooze & May 2002). Her emphasis on future action was based on a strong belief that any political economy worth its name ought to provide a normative assessment of social change, a sentiment Dryzek would adopt within his seminal article on EPE (1996). Like other critical political economies, EPE therefore goes beyond simply identifying and solving problems without attention to the existing structural framework (Cox 1986), instead locating the problems within the structure itself – thus offering a “macro-structural” form of analysis (Davidson & Frickel 2004) – an approach Cox referred to as ‘historicism’ (in the sense that it identified the temporal and evolutionary nature of the political economic structure throughout history). For Swyngedouw this type of macro-structural normative approach to the environment seeks to identify a ‘socio-ecological sustainability’, differentiated from ‘common sense’ or ‘postpolitical’ understandings of sustainability (which are equated with ‘environmental populism’) because of its fundamentally *political* character:

“Such politicization seeks answers to questions about what or who needs to be sustained and how this can be maintained or achieved... Questions of socio-environmental sustainability are fundamentally political questions revolving around attempts to tease out who (or what) gains from and who pays for, who benefits from and who suffers (and in what ways) from particular processes of metabolic circulatory change” (Swyngedouw 2007, p.37). EPE, then, considers the structural (political economic) dynamics involved in human-environment interaction and advocates historically contingent *change* to underlying productive and social relations with the normative aim of confronting socio-ecological *injustices* (broadly defined to include, for example, social inequalities, imperialism, repression, pollution and degradation; see Blomley 2009).

Again, this approach runs counter to conventional eco-modernist and Promethean approaches of environmental management which emphasize technological innovation, and, in the case of the former, market reorientation and improved efficiency standards, as the favoured solutions to ecological problems (Castree 2001b). As such, these approaches are ‘ahistorical’ (in Coxian terms; see Cox 1986), or ‘postpolitical’ (in Žižekian terms; see Žižek 1999), because, as Swyngedouw clarifies, they assume that “the social and ecological problems caused by modernity/capitalism are *external* side effects; [that] they are not an inherent and integral part of the relations of global neoliberal capitalism” (Swyngedouw 2007, p.34). Boyce (2002) also laments how “the conventional explanations for environmental degradation proffered by economists usually downplay the importance of political economy. The standard textbooks characterize pollution and natural resource depletion as impersonal ‘negative externalities,’ social costs that slip through the fingers of the market’s invisible hand” (Boyce 2002, 7). EPE’s macro-

structural scale of analysis thus offers a means of exposing the way socio-ecological externalities are an integral dynamic of the underlying political economy. As York and Rosa suggest, a genuine picture of socio-ecological impacts cannot be obtained without such a macro-structural analysis, which sees “degradation of the environment resulting from the incessant expansion of production... [of] entire economies rather than individual organizations or industries within economies” (York & Rosa 2003, p.279).

This macro-structural framework also identifies how in a capitalist economy, where economic growth is a fundamental requirement (Piketty 2014), socio-ecological impacts play a binary role – on one hand serving as an impetus for new opportunities (and spaces) of further growth, while on the other hand working against profitability. As Bakker suggests, “the key insight of political economists is that negative externalities are at times useful to, and at other times a barrier – both material and political – to capital accumulation” (Bakker 2009, p.1782). When such externalities facilitate or enable accumulation (through either ‘displacing’ the problem(s) to other spaces or times, or through subsequent ‘internalization’ efforts – such as pollution mitigation programs) the result is what Bakker calls an ‘ecological fix’ (discussed in greater detail below). Through such mechanisms, the prevailing political economic system which undergirds much of contemporary global civilization is responsible for materially ‘reproducing’ nature, such that “nature is made increasingly *internal* to the dynamics of capitalist accumulation” (Castree 2001, 191).

This is why, as Harvey identified in 1993, it is important to interpret the dialectical relationship between the ‘ecological’ and the ‘social’. A number of key works – in particular Smith’s theory of ‘uneven development’ (Smith 1984), Cronon’s writings

on humans as a shaping force in environmental history (Cronon 1983; see also Cronon 1995), Schnaiberg's notion of the 'society-environment dialectic' (1980), McKibben's (1989) thesis on 'the end of nature', and Castree's work on 'social nature' (2001a; 2001b) – have all prompted scholars of human-environment interactions to re-conceptualize the 'natural world' as a fundamentally *social* entity, and vice versa. This idea has found renewal in the concept of the 'Anthropocene' (Steffen et al. 2007; Zalasiewicz et al. 2008), which proposes that human activity has become a definitive force (if not *the* definitive force) in shaping the Earth system. The important point to draw for EPE from this society-nature dialectic is that environmental change will inevitably influence social systems; while at the same time, the constitution of social life – including the structural dynamics of human modes of production and the way human societies are organized – has profound implications for natural systems. To conclude, then, with a basic definition of EPE; it is defined here as a transdisciplinary and dialectical approach to socio-natural relations that adopts macro-structural forms of analysis to normatively expose socio-ecological externalities and locate opportunities for socio-ecological sustainability.

Battling for Legitimacy

In its 'historicist', macro-structural levels of analysis, EPE is concerned with both the 'material' and the 'subjective' (or 'ideational') aspects of the political economic structure. The relative importance of these two spheres has long been a point of methodological contention in political economic analysis, particularly within Marxist schools, harkening back to a debate about what Marx really meant when he claimed in *A Contribution to the Critique of Political Economy* (1859) that "the mode of production of material life *conditions* the great process of social, political and intellectual life"

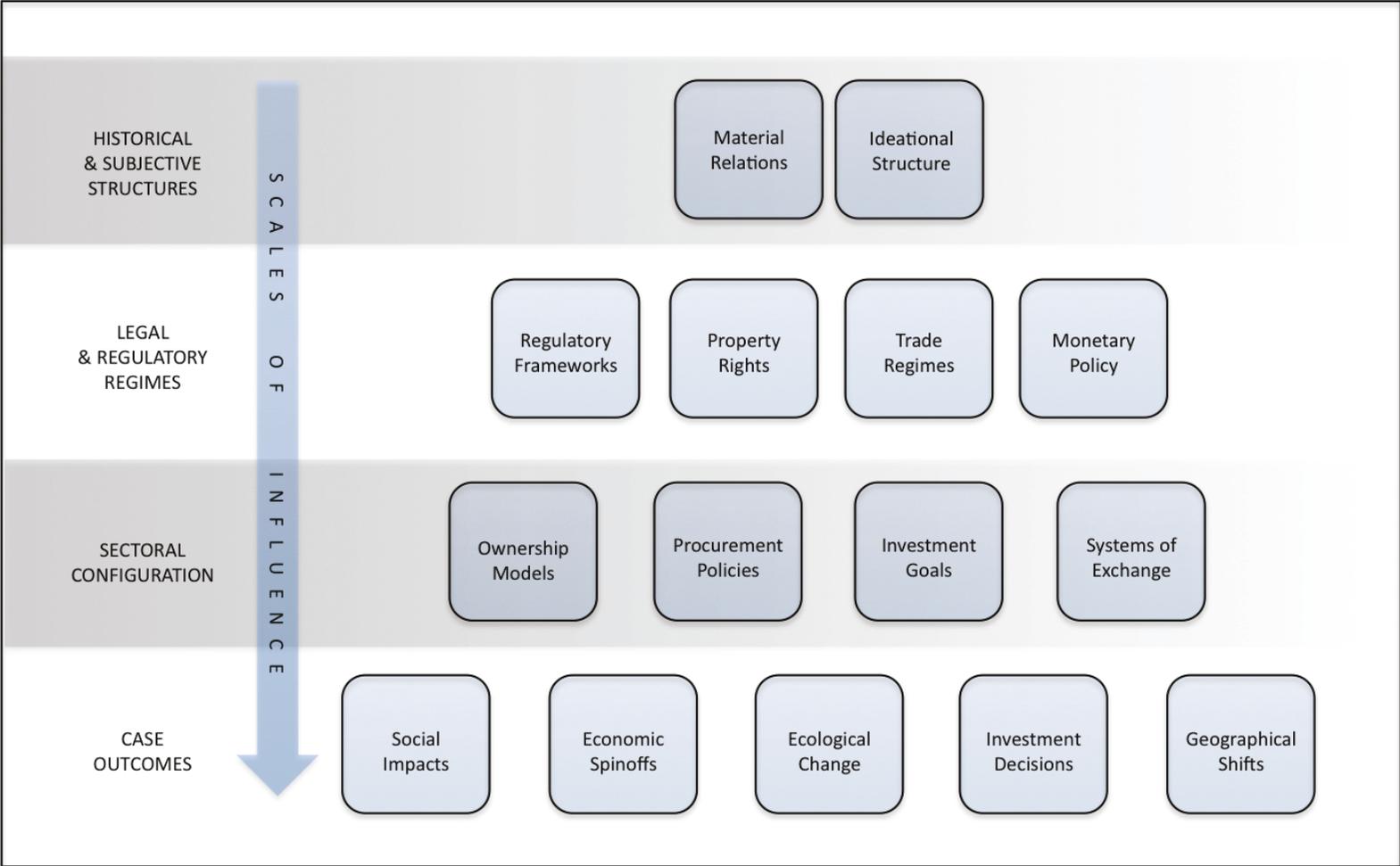
(emphasis added); For so-called “structural Marxists” (in the tradition of Althusser), a more doctrinaire interpretation of this creed featured emphatic attention to the ‘material base’, a method which would be critiqued by so-called ‘Marxist humanists’ (in the tradition of Lukács, Gramsci, and the Frankfurt School theorists such as Horkheimer, Adorno and Marcuse) for being ‘economically reductionist’. In contrast, the latter humanists (sometimes called ‘Western Marxists’) interpreted this conditioning between the mode of production and the ideational sphere (or between the ‘base’ and the ‘superstructure’) as largely dialectical – the social, political and intellectual realm was seen as mutually influential in impacting material outcomes (Cox 1986, p.216).

Much of the contemporary critical political economy literature tends to side with the humanist approach in this regard (Germain 2007), featuring a dialectical interest in both the material *and* the ideational. The influence of Gramsci on the literature has been particularly instrumental – particularly his theoretical constructions of the notions of ‘hegemony’, ‘consent’, ‘common sense’ and the role of ‘intellectuals’ in obtaining these relations (Gramsci 1971), especially so in leading critiques of neoliberalism (Harvey 2005; Peck & Tickell 2007; Peck 2010). Harvey, for instance, goes to great lengths in *A Brief History of Neoliberalism* to explain how the neoliberal turn involved the “construction of political *consent*” through the production of new forms of “*common sense*” in the late 1970s and early 1980s, particularly in the United Kingdom and the United States (Harvey 2005, p.39; emphasis added). Neoliberalization is thus a political project brought about through a “ ‘long march’ of neoliberal ideas”, programmatic work performed by the ideology’s proponent “intellectuals” within think tanks, the media, political parties, civil society organizations, and academic institutions, among other

spaces of the ideational sphere (Harvey 2005, p.40; emphasis added). Peck adopts a similar Gramscian-influenced theoretical framework in his numerous examinations of neoliberalism (see, for instance, Peck 2010, in particular pp. 138–39), also placing a great degree of emphasis on the ideational sphere as a locus for the originating kernels of political economic change through the construction of new forms of thought. Elsewhere, Peck has used Gramscian terminology to identify how “the organic intellectuals of [neoliberal] Thatcherism prosecuted their project, *inter alia*, by fostering new institutional forms like the think tank and the attendant machinery of profoundly centralized decision making” (Peck & Tickell 2007, p.47).

Following in this tradition, the use of EPE in this thesis adopts a similar dual focus on the ‘material’ *and* the ‘ideational’ as structural spaces where political economic change is situated. Thus, Part Two of the thesis, which historicizes both Canada’s specific HSR development story and the nation’s underlying political economic transformation, does so by considering both material and subjective aspects of change. Figure 2A models this author’s understanding of the ‘scales of influence’ involved in Canada’s political economy. It shows how specific case outcomes (for instance, the decision to invest in a transport infrastructure project, or the social or ecological impacts of said project) can be linked to variegations in the configuration of economic sectors, legal and regulatory regimes, and the nation’s underlying historical material and subjective structures.

Figure 2A: Political Economic ‘Scales of Influence’



Credits: Figure produced by author.

What this model suggests is that changes at one scale of political economy (say, for instance, in the political ideologies that occupy a dominant position within the ideational structure) can have a cascading influence upon subsequent scales, ultimately finding expression in specific case outcomes (say, for instance, influencing whether or not investment for a proposed infrastructural project is approved). This model also demonstrates why the realm of ideas is such an important and contested political space – since predominant beliefs (or ‘common sense’) understandings of the appropriate relationship between states and markets can have a major influence on material outcomes.

In considering the ideational sphere of Canada’s political economy, the thesis pays particular attention to the internal discursive debates within that space. Discursive political economic debates have been described in different terms by various scholars: Hall, also drawing heavily from Gramsci, refers to a “battle of ideas” where various strands of thought compete for the title of common sense (Hall 2011; Hall 1988); Davidson and Gismondi, two scholars who closely consider the development of eco-modernist thought in Canada, frame this debate in terms of a contest for ‘legitimacy’, with the latter defined as “concession to the ‘justness’ of given power structures, projects, and ideologies by those subjected to them” (2011, p.7). For them, legitimacy is ‘fluid’ as opposed to ‘absolute’ – various ideologies and modes of thought bump up against one another in the process of being subsumed by authoritative institutions; further, “legitimacy is enhanced through the control of information through certain mechanisms – including the mass media in particular – which have the effect of maintaining the hegemony of certain beliefs” (Davidson & Gismondi 2011, p.8). The authors thus turn to

discourse and popular narratives as a means of capturing and characterizing legitimacy: “We can learn a great deal about legitimacy, then, by exploring the ongoing discursive practices employed by political agents as a means of negotiating or contesting legitimacy” (Davidson & Gismondi 2011, p.9). Dryzek, in his assessment of environmental discourses (2013) ties ‘legitimacy’ and ‘common sense’ together as the ends to discursive means: “Discourses construct meanings and relationships, helping define *common sense* and *legitimate* knowledge” (p.9, emphasis added).

The foregrounding of discourses has become a widely adopted method in EPE given the latter’s critique of the way political economic assumptions often remain hidden behind environmental claims (Dryzek 2013). As Winfield and Dolter argue (2014, p.424), it is important to consider “the roles [that] underlying ideas, norms and assumptions [play] in policy formulation.” Further, they point out how underlying “perspectives on the appropriate roles of markets and the state and the relationship between economic development and environmental sustainability” (or “differences in ideational perspectives”, as they subsequently refer to it) play a guiding role in influencing how various actors adopt one policy vision over another (Ibid). Hence this thesis closely considers different discourses and the contestation between them in its assessment of both Canada’s political economic transformation and the domestic HSR story. Chapter Four sets out to consider what have been the primary subjective visions (or narratives) of HSR development in Canada, with special attention to the ecological political economic foundations such narratives have presumed (as noted above, I highlight three core narratives – Turbotrain, EcoTRAIN and ZeroTRAIN). Part Two of the thesis then considers the historical interplay between these narratives and the evolving

material histories of HSR and domestic political economy, thereby enabling a characterization of the dominant viewpoints about numerous forces influencing HSR's development over the last five decades. Specifically, through a historical review of material change, Part Two examines which subjectivities (regarding infrastructural spending, public rail subsidies, modernization, competition in the intercity transport market, the role of government in markets, sustainability, etc.) have obtained political legitimacy, and how they have acquired such legitimacy.

Spatial Fixes and Ecological Fixes: Identifying a Research Question

As suggested above EPE is concerned with the political economic motivations which underlie various socio-ecological claims or political projects. As the technological marvels that they are at a conceptual level, high-speed trains warrant further critical reflection merely by virtue of the way they so characteristically capture the essence of the evolutionary nature of contemporary capitalist development through their proposed compression of time and space (Harvey 1990; Harvey 2001). As Harvey (1990) has argued, “the revolutionary qualities of a capitalistic mode of production, marked by strong currents of technological change and rapid economic growth and development, have been associated with powerful revolutions in the social conceptions of space and time” (418). To be included in these conceptions of space and time are the contemporary relations of transport – for what is transport other than the practice of trading space with time? This much has been argued by French transport geographer Pierre Merlin, who philosophically suggests that “the ideal transport mode would be instantaneous, free, have an unlimited capacity and always be available. It would render space obsolete” (Merlin 1992; as quoted in Rodrigue, Comtois and Slack 2009, 1). Clearly, high-speed

trains do not meet this description, yet they, along with air travel, take a step towards this ‘ideal’ spatial framework within a capitalist structure. Harvey’s insight suggests that the way contemporary societies have conceived, practiced, and experienced transport operates within those societies’ modes of production and their characteristic social relations. Given the globalization of capitalism, the transportation of both goods (both material and immaterial) and people is increasingly commoditized, and the tendency is for the commodity to continually present itself in new forms which facilitate a more extreme annihilation of space by time (Gregory 2009b). The improvement of transport speeds and the evolution of transport technology has thus become a defining feature of contemporary capitalism (and contemporary mobility relations), enabling people to travel further distances and travel more.

Scholars have characterized this concept in different ways – in some cases exaggerating the extent to which capitalism has brought about “the end of geography” (O’Brien 1992), or “the death of distance” (Cairncross 2001). As Flyvbjerg et al. (2003) write, “modern humans clearly have a preference for independence from space and are consistently undercutting the friction of distance by building more and improved infrastructure for transport” (3). For Flyvbjerg and his colleagues this helps explain why large infrastructure projects like HSR or airports are increasingly central to the reification of contemporary capitalism. In this light, high-speed rail is much more than ‘just another mode’ competing with other transport modes; rather, HSR is part of a larger spatio-temporal phenomenon related to the evolution of ‘frictionless capitalism’ (Ibid.). Its role in such a political economic schema is to facilitate expansion by creating new spaces for

the accumulation of capital, and manifesting in new markets through the reduction of friction (Whitelegg & Holzapfel 1993).

This qualifies HSR projects, in most instances, as ‘spatial fixes’. Drawing on Marx and geographical interpretations of terrestrial ‘space’ (Lefebvre 1991), critical political economists have interpreted the contemporary process of neoliberalization as “nothing more than yet another round in the capitalist production and reconstruction of space. It entails a further diminution in the friction of distance (what Marx referred to as ‘the annihilation of space through time’ as a fundamental law of capitalist development) through yet another round of innovation in the technologies of transport and communications” (Harvey 2001, p.24). Harvey’s original use of the term ‘spatial fix’ to describe this phenomenon (Harvey 1981) was on one level intended to convey the meaning of a drug addict requiring a ‘fix’, due to the cyclical and continual way in which capital is dependent on the reconstruction of space: “It is implied that the resolution is temporary rather than permanent, since the craving soon returns” (Harvey 2001, p.24). Capitalists (and capitalist states), in other words, are “addicted to geographical expansion... [and] addicted to technological change and endless expansion through economic growth” (Harvey 2001, p.24). This theoretical framing of HSR as a spatial fix is not designed to imply there is no social utility or benefit to be found in HSR development. Rather, its purpose is to explain and locate the underlying ‘*raison d’être*’ or motivation of HSR development processes.

In turn, the concept of the ‘ecological fix’ stems from the broader idea of the ‘spatial fix’. As noted in Chapter One, EPE scholars (and critical geographers in particular), have expressed wariness of the way new environmental technologies are

potentially limited by the underlying political economic structure in which they are situated, and have thereby developed a discussion about ‘ecological fixes’ as a means of identifying the temporal and/or spatial displacement of the ‘costs’ (broadly defined) of green technologies, as well as the role they play in the reification of neoliberal capitalism (Bakker 2009, p.1782; see also Castree 2008). As Swyngedouw has added to this discussion:

An extraordinary techno-managerial apparatus is under way, ranging from new eco-technologies of a variety of kinds to an unruly complex of managerial and institutional configurations, with a view to producing *a socio-ecological fix* to make sure nothing really changes. Stabilizing the climate seems to be a condition for capitalist life as we know it to continue (Swyngedouw 2010, p.222; emphasis added).

Ecological fixes thus propose technological innovations as ‘solutions’ to various contemporary socio-ecological problems without requiring significant changes in production or consumption relations – hence their attractiveness to capital in the neoliberal era. Bakker (2009) thus identifies the ecological fix as one of a suite of key neoliberal ‘tactics’, specifically designed to target environmental degradation (in the sense of internalizing profit-generating opportunities and externalizing cost-generating factors; see Table 2A).

Drawing upon Shiva (2005) and Castree (2008), Bakker further clarifies the role of the ecological fix in the reification of neoliberal capitalism through its creation of new spaces of potential accumulation:

“Vandana Shiva’s characteristically pithy description of ‘sustainable development’ captures the logic nicely: an ‘ecological fix’ is a means of turning a potential threat into an opportunity. Castree follows this line of argument in defining ‘environmental fixes’ as a set of strategies adopted by fractions of capital (or the state) in order to combat barriers to accumulation, and foster continued economic growth” (Bakker 2009, p.1782).

Table 2A: Neoliberalizing Nature: Targets and Tactics

Target	Tactic
<i>Institutions (rules, norms, laws)</i>	
Property rights	Marketization
Trade rules	Liberalization
Pricing	Commercialization
<i>Governance</i>	
Regulatory frameworks	Deregulation and reregulation
Resource management	Private sector participation
Decision-making authority	Devolution to nongovernmental actors
Accountability mechanisms	Client-provider substitutes for citizen-representative relationship
<i>Socionatural actors</i>	
Environmental pollution	Ecological fix
Human bodies	Alienation
Government agencies	Corporatization
Conventional resources	Privatization, accumulation by dispossession

Source: Adapted from Bakker (2009, p.1784).

In this sense, while HSR has since its earliest conceptualization qualified as a ‘spatial fix’, it has only more recently specifically become an ‘ecological fix’. The notion of HSR as the former has been picked-up by Minn: “The rapid interconnection of population and labor centers within productive megaregions would facilitate circulation of labor and consumers. HSR would be a medium for the production of space to meet the needs of capitalism” (Minn 2013, p.189). Yet it is precisely the manifestation of spatial fixes within the transport sector which have created a space for the emergence of ecological fixes – a phenomenon which has largely gone unaddressed in the political economic literature of HSR (a lacuna this thesis aims to address).

The history of Canada’s HSR development plans, and particularly the evolving rhetoric about HSR’s proposed benefits and costs, indicates that the technology’s

advocates increasingly turned towards its construction as an environmental project throughout the 1990s and 2000s. A broader historical ecological political economy of Canada thus helps contextualize the emergence of HSR as an ecological fix: The development of higher speeds and the evolution within different transport modes since Confederation have resulted in an expansion of mobility in Canada, and this expansion has exacted a severe environmental toll. For instance, as the federal government has reported, GHG emissions produced within the transport sector grew from 128 Mt CO₂ equivalent in 1990 to a high of 168 Mt CO₂ equivalent in 2005, and have hovered thereafter in the mid-160 Mt range through to 2012 (Environment Canada 2014); as a general trend, between 1990 and 2005, more people were travelling further distances in larger vehicles, resulting in an increase of 33% in transportation's environmental footprint (Government of Canada & Employment and Social Development Canada 2006). The need to address unsustainability within the domestic transportation sector was increasingly expressed during that same period of time. For instance, a 2002 report by Environment Canada titled *Making Transportation Sustainable* noted how "there is growing concern that current transportation trends are not sustainable. Over the past 50 years, passenger travel in Canada has increased by more than five times, even though Canada's population only doubled during that period" (Environment Canada 2002, p.1). For its part, Transport Canada initiated its first "sustainable development strategy" in 1997, followed by a second in 2001 (a document it now releases on an annual basis); yet from the very beginning these strategic documents highlighted the government's neoliberal approach to sustainability, characterized by eco-modernist principles founded upon technological innovation, consumer choice, and voluntary actions on the part of

polluters: “Ideally, technology would provide the solution to sustainable transportation by offering vehicles, fuels and infrastructure that provide the same (or better) levels of service at the same (or lower) cost, while reducing (or eliminating) adverse impacts” (Transport Canada 2003, p.6). The report continues: “A large part of the burden for making transportation more sustainable will fall on individuals and corporations making choices of mode, vehicle, fuel, technology, and operating practices” (Ibid). Meanwhile, where the government saw its own role in making the sector more sustainable was in enabling competitive markets: “The Government of Canada believes that the transportation system of tomorrow should remain largely market-driven, where government sets a competitive framework” (Ibid). It is within this neoliberal context that the stage was set for HSR proponents to adopt a new type of spatial fix – an ecological fix. Proponents would increasingly appeal to its environmental potential as a means of convincing decision-makers to invest in the technology (this historical process is thoroughly detailed in Part Two of the thesis, below). As identified in the introductory chapter, the manifestation of HSR as an ecological fix serves as the guiding research puzzle of this thesis, and so the ensuing chapters attempt to provide an in-depth explanation of when, how, and why HSR became an ecological fix in Canada.

Problematizing, Characterizing and Differentiating Neoliberalism(s)

Given the prominent role of neoliberalism and neoliberalization in this thesis it is necessary to consider this concept in more theoretical detail. As mentioned in Chapter One, this study uses as a starting point Harvey’s general definition of neoliberalism as “a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an

institutional framework characterized by strong private property rights, free markets, and free trade” (Harvey 2005, p.2). Despite this clear definition, there are some important nuances which require exploration. First, as Martinez and Garcia (1996) have pointed out, it is worth making a distinction between different iterations of ‘liberalism’ – some of which have come to play a more prominent role in contemporary *neo*-liberalism than others. For instance, we have on one hand a political or philosophical liberalism tied to Enlightenment philosophies of freedom, equality, and rights, and descending from the writings of Milton (1644), Locke (1690), Montesquieu (1717; 1748), Voltaire (1763) and Jefferson (United States 1776), among others. This is in contrast to the ‘classical liberalism’ in economic theory found in the famed writings of Smith (1776), Malthus (1798) and Ricardo (1827), for instance, which advocated a so-called ‘*laissez-faire*’ approach to markets and international trade. Insofar as neo-liberalism marks the resurgence of liberalism, its contemporary iteration is certainly more closely aligned with the latter form of economic liberalism than the former political liberalism. In short, the form of neoliberalism under analysis here is centred on a discourse of *market* or *capital* freedom.

Second, given the preceding point it is necessary to explain why the prefix ‘neo’ is warranted. After all, as explored above, capitalism has always involved freeing up market processes, the consolidation of private property relations and the opening up of international trade and investment barriers; so what exactly is so ‘new’ about the economic liberalism we know today? Arguably, the ‘neo’ in this sense marks the *resurgence* of a specific form of capitalism which was at one time dominant, but which then waned in influence. The term ‘neoliberalism’ as a whole must then be understood as

inherently temporal, reminding us that a *laissez-faire* creed similar to that which came to prominence with industrialization in the mid-1800s has once again become fashionable within political and economic decision-making circles. To be sure, the ‘Keynesian’ period which separates the two *laissez-faire* periods was undoubtedly capitalist as well, yet it was a different form of capitalism featuring a certain measure of self-restraint: Markets were in some instances understood to require tempering and government oversight, public property was in many instances interpreted as a social good, and in some cases national economic policies were prioritized at the expense of restricting international flows of capital (Blinder 2008; Patomäki 2009).

The creed which we now associate with John Maynard Keynes had become dominant, if not hegemonic, throughout the West in the mid-Twentieth Century (Albarracín 2002), in part through Roosevelt’s New Deal, and additionally through the enacting of the Marshall Plan in Europe and the development of global agreements formed at Bretton Woods in 1944 (DiLeo 2009; Plant 2010, pp.176–7). The main theme of Keynesianism was that “the modern capitalist economy does not automatically work at top efficiency, but can be raised to that level by the intervention and influence of the government” (The Economy 1965, p.64; see also Keynes 1936) – a distinctly anti-*laissez-faire* conceptualization of capitalism. By priming the pump of domestic product in times of economic trouble a government could yield gains in production, private spending and overall investment (Keynes 1936), though it was acknowledged that this would come at the expense of restricting the freedom of capital. It is also the case that Keynesian theories lent themselves to grand, modernist, nationally-oriented megaprojects spearheaded by government – in particular large-scale infrastructure developments

(Harvey 1989; Scott 1998; Flyvbjerg et al. 2003). Broadly speaking, the Bretton Woods era, which Patomäki dates as 1944-1971, “was dominated by social-democratic ideas that incorporated Keynesianism but involved also other ideas about developing society” which were consistent with the Keynesian creed (Patomäki 2009, p.438). In this sense Keynesianism was not only differentiated from neoliberalism through its focus on the *domestic* economy (as opposed to the *global* economic orientation of neoliberalism) and Fordist production (as opposed to post-Fordist models of outsourcing and flexibilization), but also in its understanding of the state’s role in protecting social welfare through redistributive justice (as opposed to more Lockean interpretations of private self management, see Table 2B). Of course, different socio-cultural environments lent themselves to different manifestations of Keynesianism. For instance, Hirsch (1976, p. 128) notes how in Britain the application of Keynesian ideas rested on the assumption that macroeconomic managers within the public service were motivated by ‘the national interest’, whereas in the United States there was widespread skepticism about the individual self-interests of public servants facing a highly diverse national society. As explored in Part II of the thesis, Keynesianism in Canada was also shaped by its unique history and geography.

This relates to a third problem with the term neoliberalism (which similarly applies to Keynesianism), noted earlier in the thesis, which is the tendency of scholars or activists to use it in a universalizing or undefined way at the risk of missing out on the variegated ways the broader political economic philosophy is expressed and experienced in different places and times (Brenner et al. 2010).

**Table 2B: Characteristic Political Economies;
Keynesianism and Neoliberalism**

	‘Keynesianism’	‘Neoliberalism’
Economic policy	<ul style="list-style-type: none"> • Demand management policies; • Stimulus by means of deficit and public projects, especially during downturns; • High employment as the first priority; • Low inflation as a second target (some inflation good for growth, and money supply not the key issue); • National finance. 	<ul style="list-style-type: none"> • Balanced budgets and external accounts; • Low inflation as the first priority; • Consistent control of money supply as the key to low inflation; • Supply side incentives key to growth; • Free markets should not be distorted; • If stimulus needed, tax cuts; • Global finance.
Definition and regulation of the public and the private	<ul style="list-style-type: none"> • Diversity of ownership of means of production (private capitalist, public state-owned, cooperatives); • Decommodified spaces (for example in health, education); • Public and corporatist regulation of the private sphere; • Private property is not absolute. 	<ul style="list-style-type: none"> • Privatization; • Uniformity of ownership of means of production; • Commodification of new areas of social and natural life; • Deregulation and flexibility of labour markets; • Rule of law means consolidations and extension of private property rights.
Redistribution	<ul style="list-style-type: none"> • Universal tax-and-transfer policies and public services to ensure Rawlsian principles of redistributive justice (equal real opportunities and remaining inequalities must benefit the least advantaged). 	<ul style="list-style-type: none"> • Either: free competitive markets guarantee Lockean principles of justice (right-neoliberalism); or: also social safety nets, but no rights without duties and means-testing (left-neoliberalism).
Public organizations	<ul style="list-style-type: none"> • Weberian model of rational bureaucracy, based on the ethics of civil servants; • Principles of democracy applied in some public organizations. 	<ul style="list-style-type: none"> • Privatization & outsourcing; • New Public management of simulated markets within organizations; • Line management to replace elements of democracy.

Source: Adapted from Patomäki (2009, p.439).

For this reason it is important to break down the *general* neoliberal transition into the various spatio-temporal scales in which it has taken place, and further to speak of the *specific* processes involved in ‘neoliberalization’ (Peck & Tickell 2002). In terms of the former, the neoliberal turn in Canada was framed by a broader transformation at the global scale: By the turn of the century, it would be difficult to find a nation which did *not* (at least in part) play by neoliberal rules.

These rules have been well-captured by journalist Thomas Friedman, who uses the analogy of a ‘golden straightjacket’ to identify what he believes to be a required framework for nations that intend to be included within the global neoliberal economy:

To fit into the Golden Straightjacket a country must either adopt, or be seen as moving toward, the following golden rules: making the private sector the primary engine of economic growth, maintaining a low rate of inflation and price stability, shrinking the size of its state bureaucracy, maintaining as close to a balanced budget as possible, if not a surplus, eliminating and lowering tariffs on imported goods, removing restrictions on foreign investment, deregulating its economy to promote as much domestic competition as possible, eliminating government corruption, subsidies and kickbacks as much as possible, opening its banking and telecommunications systems to private ownership and competition, and allowing its citizens to choose from an array of competing pension options and foreign run pension and mutual funds. When you stitch all of these pieces together you have the Golden Straightjacket (Friedman 1999, p.103).

Sparke has codified these golden rules and the real meanings behind the policy rhetoric in terms of ten core tenets (see Table 2C). Nevertheless, the golden rules have been taken up either wholly or in part in different ways as different societies find their own expression of neoliberalism based on historical structural factors, and this variegation in experience is particularly important in the story of Canadian HSR development.

Table 2C: The Tenets of Neoliberalization

Neoliberal Policy/Mantra	What it Really Means
Trade Liberalization	Adopt Free Trade
Privatize Public Services	Use Business Efficiency
Deregulate Business and Finance	Cut Red Tape
Cut Public Spending	Shrink Government
Reduce and Flatten Taxes	Be Business Friendly
Encourage Foreign Investment	Reduce Capital Controls
De-Unionize	Respect Rights to Work & Labour Flexibility
Export Led Development	Trade Not Aid
Reduce Inflation	Price Stability & Savings Protection
Enforce Property Rights	Patent Protection & Titling

Source: Adapted from Sparke (2013, p.6).

For instance, depictions of neoliberalism as a state-corporate alliance designed solely to increase the rate of profit and contribute to capital accumulation (Kerans & Kearney 2006; Brownlee 2005; Carroll 1989) seem to accurately predict the rise of interest in privately operated, technologically advanced bullet trains, but they can not explain why neoliberal governments have *not* jumped aboard such promising growth opportunities; Meanwhile, visions of neoliberal governments as budget-slashing conservative spenders seeking to retract the state's influence in the affairs of everyday life (see Finn 2007 for a Canadian example) explain why governments have not wanted to spend much money or effort on such developments, but fail to account for the way political leaders (including neoliberal ones) have vocalized their interest in such modernist projects. The two main analytical schools of thought regarding neoliberalism seem to contradict one another, and point to at least some variegation in the way neoliberalism has been expressed in Canada both in space (at different scales of jurisdiction) and time.

One theoretical resolution is offered by Peck and Tickell (2002), who highlight two different types of neoliberalization which typically emerged in succession. The

predominant form of governance during the early transition can be called ‘roll-back neoliberalism’, in which governments were “preoccupied with the active *destruction and discreditation* of Keynesian-welfarist and social-collectivist institutions” (Peck & Tickell 2002, p.384 emphasis in original). The subsequent phase of neoliberalization in many countries featured ‘roll-out neoliberalism’ – “the purposeful *construction and consolidation* of neoliberalized state forms, modes of governance, and regulatory relations” (Peck & Tickell 2002, p.384 emphasis in original) – see Table 2D. The authors further point out of that even these two distinct forms were not themselves clean-cut monolithic expressions of neoliberalism; in many instances the legacy of Keynesianism continued to rear its head throughout the neoliberal period: “neoliberal impulses were variously interleaved with, subsumed under, and blended with a range of ‘late-Keynesian’ state formations. In this respect, roll-out neoliberalism coexisted in an unhappy marriage with its antecedent others, as a kind of unsettled hybrid” (Peck & Tickell 2007, p.31).

Table 2D: Phases of Neoliberalization

	<i>Roll-back neoliberalization</i>	<i>Roll-out neoliberalization</i>
Mode of intervention	State withdrawal	Governance
Market regulation	‘Deregulation’	Experimental re-regulation
Political style	Ideological conviction	Pragmatic learning
Change agents	Vanguardist politicians	Technopols
Ideological program	Explicitly programmatic	Institutionally embedded
Front line	Economic policy	Social and penal policy
Taxation	Selective givebacks	Systemic regression
Monetary policy	‘Cold-bath’ monetarism	Prudence
Public expenditure	Cuts	Fiscal responsibility
Labor-market regime	Mass unemployment	Full employability
Employment relations	Deunionization	Flexibility
Social policy	Retrenchment	Workfare
Financial regulation	Liberalization	Standards and codes
Development ethos	Structural adjustment	Social capital

Source: Adapted from Peck and Tickell (2007, p.34).

Part Two of the thesis examines the political economic shift from Keynesianism (including the unique brand of Keynesianism featured within the Canadian transport sector) to ‘roll-back’ neoliberalism and subsequently ‘roll-out’ neoliberalism within the different political jurisdictions involved in HSR development.

EPE and the Methodological Process

The methodological program for this research draws from the above theoretical foundations. Data was collected and processed through a mix of primary and secondary research methods, including in-depth interviews, historical and archival research, a four-year media scan and corresponding discursive analysis, comparative analysis and energy impact calculations. Through these mechanisms I have identified the primary ecological political economic narratives of HSR development in Canada, produced an historical assessment of the ‘neoliberal turn’ as experienced in many of the political spaces where HSR has been considered, and further used this political economic backdrop to examine key shifts in Canada’s HSR story. Finally, I conducted a critical assessment of the claims made by proponents about HSR’s likely socio-ecological impacts in both the QWC and CEC, using Canada’s neoliberal context as a guiding philosophy of how project planners and decision-makers would interpret the purpose and scope of HSR development. The following paragraphs provide further details on each of the core methodological steps taken.

Historical, Archival and Statistical Research

As the thesis is considerably historical, the research included a great deal of historical, archival, and statistical investigation. Of foremost importance was the need to outline the key historical political economic shifts involved in the ‘neoliberal turn’, as well as early

successes in HSR development internationally and domestically, evolving mode use patterns in Canada's intercity transportation subsector, and finally the origins of different national narratives about HSR (these all unfold in the historical section of the thesis – Part Two). Despite the increasing online presence of government information and efforts to digitize research carried out by government departments and ministries, many of the older government documents and feasibility studies accessed for this study (for instance, Soberman et al. 1970; Transport Canada 1978; VIA Rail Canada 1984; VIA Rail Canada 1989; Ontario/Québec Rapid Train Task Force 1991; Hyndman 1992) were only accessible in print. Visits to the National Archives of Canada and Carleton University's archival materials, and the use of Interlibrary Loan services were necessary to track down such documents, as well as various microfiche materials [for example historical maps of rail services offered by Canadian National and Canadian Pacific, or an important article about Keynesianism in *Time Magazine* (Time Magazine 1965)]. In the course of carrying out the research, HSR interest group High Speed Rail Canada set up a digital archive using Google Drive, where it uploaded all HSR studies of the QWC dating back to 1991 (including, most importantly, VIA Rail Canada 2002; Transport Canada et al. 1995; and EcoTrain 2011), and all government-sponsored studies of the CEC dating back to 2004 (including studies by the Van Horne Institute 2004, TEMS & Oliver Wyman 2008, and the 2014 review of HSR conducted by the Standing Committee on Alberta's Economic Future). These studies were all examined to provide a sense of the evolution of the presumed feasibility and context for HSR projects in Canada.

Statistical research was also collected from a range of governmental and scholarly sources to help characterize the historical geographical changes involved in domestic

transportation trends, demographic shifts, and economic indicators (including the rate of GDP growth in Canada and annual budgetary spending figures). The CBC maintains an interactive online database of federal deficits, surpluses and GDP figures for each year between 1963 and 2012 (CBC News 2014c), which proved to be an invaluable source to enable comparison of spending trends across different governments and eras. Similar statistical compilations by the Canadian Taxpayers' Federation (Garcete 2013) facilitated cross-referencing and verification of these figures. In terms of statistical data regarding the use of different transport modes, figures on annual passengers or riderships was gleaned from numerous Statistics Canada tables or periodic studies, including the Canadian Travel Survey, Passenger Bus and Urban Transit Statistics, and the Railway Transport Survey, as well as other sources examining the history of Canadian transportation (most importantly Glazebrook 1964; and Wallace 2002). Synthesized air and rail travel graphs showing long term usage trends were drawn from Dupuis (2011) and Tretheway (2013), and for recent trends I consulted the government's online Statistical Addendum from its comprehensive *Transportation in Canada 2011* report (Transport Canada 2012a), a trove of domestic transport statistics.

Secondary research was conducted to help weave together the various historical narratives that flow throughout Part Two of the thesis. Global histories of neoliberalization are ubiquitous, but the most insightful analyses used in this study were found in Harvey (2005) and Peck (2010). Detailed histories of the 'neoliberal turn' in Canada are harder to come by (which is why this thesis aims to help contextualize the idiosyncratic and diffuse character of neoliberalization as it occurred in this nation), but the most useful analyses which I drew from, which often focused on a specific dimension

or space of neoliberalization in Canada, were Keil (2002), Prudham (2004), Albo (2007), Enoch (2007), Gattinger and St. Pierre (2010), McBride and Whiteside (2011), and Blad (2012). Meanwhile, in-depth global histories of HSR development that consider the evolution of the technology from an international perspective are also uncommon, and thus the most useful sources from which this history was pieced together were Whitelegg et al. (1993), Gourvish (2010), Estler (2013), and a data table provided by the International Union of Railways listing all known HSR lines around the world (International Union of Railways 2013b). Finally, while this dissertation fills a literature void by offering an in-depth, up-to-date history of HSR development efforts in Canada, a number of works focusing on railway modernization and railway policy in Canada were instrumental in putting this larger story together (most notably Lukasiewicz 1976; Perl 2002; Greenlaw 2007; Shron 2007; and Paulsen 2009).

Media Scan, Legislative Evidence, and Discourse Analysis

As noted above, an important aspect of this thesis is to consider how subjectivities about Canada's political economy and HSR development specifically have obtained political legitimacy and why. Chapter Four categorizes various institutional and individual beliefs regarding infrastructural spending, public rail subsidies, modernization, competition in the intercity transport market, the role of government in markets, the meaning of 'sustainability', whether or not HSR lines should be built, and the presumed benefits, costs and impacts of HSR development (among other beliefs). To help characterize these different narratives I turned to 'discourse analysis' (Hajer 1993; Davidson & MacKendrick 2004; Blommaert 2005; Flowerdew 2008; Wodak & Meyer 2009). Interview data (see below) was supplemented with data in various communications

products produced by numerous HSR-related actors, including public relations (PR) materials, and dozens of legislative hearing witnesses – stakeholder evidence provided during parliamentary reviews of HSR held by both the federal and Alberta governments (see House of Commons Standing Committee on Transport 1992; House of Commons Standing Committee on Transport 1998; Standing Committee on Alberta’s Economic Future 2014). The digital archiving of all evidence submitted as part of the latter study of the feasibility of HSR in the CEC on the Committee’s website was an especially helpful data source.

In addition, I conducted a media scan of over 200 relevant news articles specifically about HSR development collected between 2010 and 2014. Over this four-year span I used an automated internet crawler service provided by Google to receive a weekly update of all English-language news stories containing the term ‘high-speed rail’ available on the web. Through this web-based tool I have been able to keep apprised of the key HSR developments around the world and have been made aware of any news stories about HSR within the major Canadian media outlets. In conjunction with these news articles, blog posts and PR statements (most often made in press releases or institutional reports; see for instance Harden-Donahue & Peart 2009; Green & Wu 2011; Unifor 2013; or SNC Lavalin 2014) were collected and a discursive analysis was conducted to determine where different actors sat along a spectrum of perspectives, to help categorize the different preferred contexts for HSR development as well as the main discourse coalitions which support these contexts.

As Hajer has written, a discourse coalition is “an ensemble of a set of story lines, the actors that utter these story lines, and the practices that conform to these story lines,

all organized around a discourse” (1993, p.47). It is too simplistic to solely differentiate between ‘pro-HSR’ and ‘anti-HSR’ actors; it is far more fruitful to categorize different perceptions about how different actors believe HSR development *ought* to unfold – in other words what political economic contexts are presumed to ‘optimize’ the investment expense. The term ‘actor’ was intentionally defined broadly, using a Gramscian notion of the ‘intellectual’ as an entity who shapes public opinion through the construction of strands of ‘common sense’ (Harvey 2005, p.40; Peck 2010, pp.138–39; Peck & Tickell 2007, p.47; see also Gramsci 1971; Hall 2008; and Hall 2011).

By categorizing the most common types of responses to various questions about the optimal context for HSR (see Tables 4A through 4G), I was able to identify and define the three primary EPE narratives of HSR – ‘Turbotrain’, ‘Ecotrain’ and ‘Zerotrain’. I then ‘placed’ institutional actors with the narratives they were most likely affiliated (see Tables 4H, and 4J through 4M). The idea was to use tables to visually represent the most common perspectives of HSR held by different types of organizations or institutions. For instance, labour organizations were unanimous in advocating a Turbotrain narrative of HSR development, whereas the main federal and provincial political parties involved in the jurisdictions implicated in HSR projects were largely split across the various HSR narratives (perhaps an unsurprising revelation given that different political parties espouse varying political economic ideologies, which in turn shape how they would want infrastructure projects to take shape). I additionally categorized a range of environmental organizations, transport and public policy organizations, commercial transportation firms and associations, and government agencies or associations in a similar fashion.

A parallel analysis was carried out using individual intellectuals and their respective allegiances with one of seven identified discourse coalitions (as inferred from the available public literature), with the intention of mapping out visually how different types of individual actors (politicians, journalists, entrepreneurs, activists, etc.) tended to align themselves with one discourse coalition or another, and further to see the relative ‘popularity’ of each narrative (by virtue of having the most affiliations; see Figure 4B). While this exercise confirmed my expectation that the Ecotrain vision was the most commonly espoused narrative, there are nevertheless two potential limitations to this method of analysis, both having to do with the complexity involved in characterizing human subjectivities. The first is that my interpretation of an actors’ perspective was inevitably coloured by my own presuppositions (see Harrison & Livingstone 1980). As such, despite my best efforts to be objective, actors may not necessarily agree with their ‘placement’ into one narrative or another. This relates to a second limitation, that being that subjectivities are fluid and evolve over time. As such, my analysis of the constitution of various discourse coalitions offers only a temporal snapshot of contemporary public opinion.

In-Depth Interviews

Data for the discursive analysis was supplemented with material from interviews. ‘In-depth interviews’ (Guion et al. 2011) were conducted with key subjects representing an assortment of political economic views – including non-governmental organizations, interest groups and think tanks, corporations and business associations, labour unions and political parties, and public servants and bureaucrats from different government agencies (see Appendix A for a list of requested interviews, and see Appendix B for an exemplar

of interview questions). In addition to formal in-depth interviews, a number of informal opinions were solicited from experts in relevant fields, though these discussions were solely used for contextualization and as such were not recorded.

A formal ethics protocol application was submitted to Carleton University's Research Ethics Board in December of 2012, and official clearance was granted in January 2013 (and subsequently renewed in April 2013 and May 2014). Two specific research trips were completed – one to Alberta in April 2013, where I met with individuals in Calgary and Edmonton to discuss the CEC HSR project – and one to Montreal, Québec, to discuss the QWC HSR proposal. Additional interviews were conducted in Victoria, British Columbia and Ottawa, Ontario. Interviews were transcribed and returned to subjects for review. The transcripts were then analyzed and different presumed political economic motives for HSR development were categorized. From this process it became clear that there were three core distinct narratives on how HSR projects *ought* to unfold. Interviews thus served as important markers of the different HSR narratives in Canada, providing additional depth and nuance to the different EPE contexts that was not available from the discursive analysis of media articles and public relations (PR) materials.

As noted in Appendix A, not all interview requests were granted. Of particular significance to the study was the lack of participation of the Ontario Minister of Transportation and the Mayor of Québec City, as these interviews were intended to target institutional perspectives about HSR in the QWC from a representative of the Ontario government and from a municipal government which had been outspoken in its public support for the project. Nevertheless, since the interviews were intended to collect

supplementary nuanced data, and since the institutional perspectives of these two subjects in particular were well documented in public fora, it was still possible to infer an aligned HSR narrative for these actors.

Comparative Analysis

The thesis has also employed comparative research as a means of drawing relationships between various HSR storylines and their structural origins. For this reason it has been important to characterize regional, federal and global-level political economic shifts as they have influenced the Canadian transport sector, as well as key events in global HSR development. From here it has been possible to test how the interplay of neoliberalizing forces at various scales has shaped (and theoretically, could shape in the future) the socio-ecological outcomes of HSR in Canada. Comparative analysis between different narratives and between different structural foundations has therefore been helpful in scoping out lessons to be learned to enhance the domestic policy debates, while at the same time maintaining a cautious stance towards the way different historical, geographical, political and economic contexts shape different national experiences with HSR development.

The comparative analysis largely unfolds in Chapter Three and Chapters Five through Seven (Part Two of the thesis), where international developments in HSR are discussed in greater detail. Since Canada does not have a genuine HSR system, it was useful to draw from the international context what types of technologies might be most realistically considered in the QWC and CEC, and further what types of challenges or obstacles would be faced by Canada in attempting to introduce HSR as a new transport technology (see discussion in Chapter Three). International comparative research also

helped me to scope out the global dimensions of the contemporary resurgence of interest in HSR, which I frame (building upon Whitelegg et al. 1993) as part of a ‘fourth wave’ of global railway modernization (see Chapter Seven).

Energy and Carbon Footprint Calculations

Chapter Eight employs some basic energy use and carbon footprint calculations to assess the credibility of energy efficiency claims made by HSR proponents regarding its introduction within the QWC and CEC. It uses the reported emissions savings by the Van Horne Institute (2004), TEMS & Oliver Wyman (2008) and EcoTrain (2011) as base figures, and then reassesses these values by considering the relative and comparative footprints of different short haul transport modes in North America (automobiles, airplanes, high-speed trains, conventional trains and buses – drawing from CCAP and CNT 2006); the likely carbon footprint of construction (using statistical data from Jehanno et al. 2011); and the likely carbon footprint of additional electricity generation requirements (using data from Aplin 2014 and Alexander 2012). However, the chapter also assesses the potential macro-level environmental impacts which could accrue as a result of the growth in mobility and economic benefits associated with HSR development in the two corridors, as claimed in contemporary feasibility studies (Van Horne Institute 2004; Shirocca Consulting & Anthony Steadman & Associates 2011; TEMS & Oliver Wyman 2008; EcoTrain 2011). This calculation of both specific and second order impacts was intended as a more nuanced re-evaluation of the ecological case for HSR in the QWC and the CEC from a macro-structural viewpoint.

As a caveat, these energy impact calculations are *not* meant to offer a comprehensive ‘well-to-wheels’ analysis of the emissions that would be expected from

introducing HSR in the QWC and CEC, *nor* are they intended to enable a full cross-modal comparison of HSR's socio-ecological impacts versus those of competing modes (the latter would require at the very least an analysis of the incremental energy requirements over a thirty year period of the maintenance of infrastructure used by the traffic that was not diverted as a result of an HSR line not being built). Rather, the intention of the energy impact calculations here is to: a) offer a more nuanced interpretation of the likely emissions reductions to be expected from the introduction of HSR; b) identify how such impacts are influenced by a complex array of factors (many of which often go unconsidered), and c) note the very limited scope of socio-ecological gains one can expect from the introduction of a new mode of transportation under a 'business-as-usual' regulatory scenario.

Conclusion

The preceding pages have delved into the theoretical approach used in the thesis – a critical transdisciplinary and dialectical approach to society-nature relations named ecological political economy. This approach, in turn, has shaped both the thesis' research agenda and its methodological program. This is to say that the main focus of the thesis is on the explanatory power of political economic structures (both material and ideational), particularly as they influence society-nature relations, with a normative aim of exposing socio-ecological externalities and locating opportunities for 'socio-ecological sustainability'. Specifically, EPE is an approach which is well suited to explain the structural dynamics involved in the transformation of HSR since the late 1980s into a neoliberal ecological fix. The thesis now turns to the specifics involved in Canada's high-speed rail story.

CHAPTER THREE: High-Speed Rail in a Canadian Context

What has resulted over the years is a *highly unbalanced* transportation system with overemphasis on highways and airways, and a neglect of railroads, which often operate with old equipment on poor quality track and use obsolete facilities and operational procedures. Under the present ‘rules of the game,’ which continue to emphasize intra-modal competition and profitability, railway modernization in Canada cannot take place.
- J. Lukasiewicz, *The Railway Game* (1976, pp.1–2; emphasis in original).

Introduction

The contemporary context underlying railway modernization in Canada shares some remarkable similarities to that described by Lukasiewicz in 1976, though in many ways the context has evolved considerably since then; this chapter initiates a discussion about said context. It introduces the two main regional corridors where HSR has been genuinely considered by domestic decision-makers – the Québec City-Windsor Corridor (QWC) and the Calgary-Edmonton Corridor (CEC) – and briefly touches on the proposed routes and key findings of feasibility studies conducted in each corridor. The chapter offers a working definition of high-speed rail applicable to the Canadian context, and reviews the main technological sub-types which have been considered for both the QWC and CEC. The question of which technology *ought* to be implemented in a genuine HSR investment scenario in Canada is complicated by historical and geographical factors, as well as specific domestic challenges related to HSR infrastructure development.*

* As Chapter Four demonstrates, political economic leanings also influence the beliefs regarding the ‘best’ technology for HSR development in Canada.

Defining High-Speed Rail for Canada

Since rail speeds have historically increased over time with new innovations there is no consensus on the true definition of ‘high-speed rail’. While 200 km/h is widely interpreted as a benchmark speed for HSR (Whitelegg et al. 1993), various international organizations hold variations and interpretations of this definition, depending on certain contextual factors. For instance, the International Union of Railways (IUR) claims that in nations where steps have been taken to improve speeds and where there may be the rolling stock capable of travelling above 200 km/h, the lines may be called “high-speed” even though they may be restricted to travelling within the 160 km/h to 180 km/h range due to safety precautions (International Union of Railways 2013a). According to the IUR’s definition, Canada’s diesel-electric trains operated by VIA Rail would qualify as ‘high-speed’, since the Light Rapid and Comfortable (LRC) equipment produced by Bombardier is technologically capable of just surpassing the 200 km/h benchmark, and the trains reach sustained speeds of over 160km/h in the QWC (Hanus & Shaske 2008). VIA is restricted to maximum travel speeds of 160km/h across the country (the only exception being segments within the QWC where special permission is granted for maximum speeds of 180km/h). In a Canadian context, then, the IUR’s definition is not very compelling, since the diesel-electric fleet and infrastructure used by VIA is commonly conceptualized as a ‘conventional’ rail system (see Chapter Four).

Another definition of high-speed rail is offered by the US Federal Railway Administration (FRA), which has tried to move away from benchmark speeds as a defining factor for high-speed ground transportation (HSGT), turning instead to “a market-based definition”: HSGT is thus defined by the FRA as any “self-guided intercity

passenger ground transportation system that is time-competitive with air and/or autos on a door-to-door basis” (Gravelle 2007, p.2). This definition is equally unconvincing, since again, Canada’s conventional rail system offers competitive door-to-door travel times with automobiles, particularly within the QWC (VIA Rail 2014b). As described in the introduction of this thesis, high-speed rail is popularly conceptualized in Canada as a *new* technology, marking significant speed improvement over existing passenger rail services.

A more functional definition of HSR is offered by the European Union, which now lists two benchmark speeds – 250 km/h for rail systems specifically designed for high-speed rail, and 200 km/h for conventional systems which have been *upgraded* to allow for higher speed service (in part by separating passenger rail from freight rail infrastructures). There does tend to be institutional agreement that genuinely high-speed trains are most *safely* operated when all the elements of the system – the rolling stock, the infrastructure, and the operating conditions – are dedicated for high-speed operation only. The E.U.’s benchmark speeds are compelling in a Canadian context if interpreted as *sustained* speed capacities, not solely maximum obtainable speeds.

Yet a more compelling definition for the Canadian context is offered by scholars Campos and de Rus, who call for a *relational* interpretation of HSR based on “the relationship of HSR with existing conventional services and the way in which the use of infrastructure is organized” in a particular society (Campos & de Rus 2009, p.20). For the purposes of this thesis, ‘high-speed rail’ is thus defined in a Canadian context as a system of dedicated track designed solely for operation of passenger trains regularly reaching sustained speeds above 200 km/h and which makes significant technological improvements over existing ‘conventional’ train services in Canada. Meanwhile, the term

‘higher speed rail’ is used to denote efforts made to increase the speed of *conventional* train systems without making the complete switch to genuine HSR equipment and infrastructure. In Canada, ‘higher speed rail’ would thus likely involve either the removal of freight trains from segments of existing right-of-way to allow passenger trains to travel faster, or alternatively the addition of new segments of dedicated passenger-only track (again, to enable trains to travel on tracks that are not used by freight). These improved infrastructures may at times permit speeds over 200 km/h, however they would not qualify as genuine HSR because not all elements of the system would be dedicated to high-speed operation and there would not have been a major technological change from conventional rail. As a final note on nomenclature, although the term ‘bullet train’ is often used interchangeably with ‘high-speed train’ (HST), it should be noted that the former term is a legacy of the specific design of HSR in Japan in the 1960s, because of the shape of the early *Shinkansen* prototypes (TokyoTopia 2013). This thesis nevertheless uses the terms interchangeably as is commonly done in Canadian public discourse.

Canada at “Half the World Standard Speed”

While trains regularly travelling above 200 km/h would mark a significant improvement over Canadian passenger trains, internationally rail has a long history of reaching such speeds. Commercial HSR lines first emerged in the 1960s in Japan, yet engineers had broken the 200km/h benchmark as early as 1903 in a speed test run between Marienfelde and Zossen, Germany. Subsequent records were set in speed tests in the decades thereafter, see Table 3A (Estler 2013; Whitelegg et al. 1993).

Table 3A: Global Rail Speed Records

Year	Speed (Km/h)	Country	Type of Train
1903	203	Germany	Electric railcar
1903	210	Germany	Electric railcar
1931	231	Germany	Petrol railcar driven by a propeller
1953	240	France	Electric locomotive with passenger cars
1955	331	France	Electric locomotive with passenger cars
1981	381	France	Electric train set
1988	407	Germany	Electric train set
1989	482	France	Electric train set
1990	515	France	Electric train set
1997	550	Japan	Maglev
1999	552	Japan	Maglev
2003	581	Japan	Maglev

Sources: Whitelegg et al. (1993, p.14); Guinness World Records (2014).

The maximum velocities reached during speed tests do not tell us much about the average sustained speeds achieved within commercial passenger rail operations. In the 1930s diesel-powered trains were developed for commercial use (eventually taking over what was predominantly steam-powered technology), allowing trains to reach sustained speeds of roughly 135 km/h.* By mid-century diesel-traction technology had improved significantly, with commonly seen sustained speeds in the 160-180 km/h range. The commercial ‘bullet train’ unveiled in Japan in 1964, which travelled at a top speed of 210 km/h, was qualitatively different, not only in terms of reaching new average speeds, but in introducing vastly improved rail technology over the nation’s existing ‘conventional’ diesel powered trains.† The Shinkansen was the world’s first true high-speed train (Smith 2003; Matsuda 1993).

* Two standard-setting trains of the 1930s included the ‘Flying Hamburger’, which ran between Berlin and Hamburg, and the ‘Burlington Zephyr’, which ran between Denver and Chicago (Gourvish 2010).

† For instance, the original Tokaido Shinkansen differed from conventional lines in Japan through its adoption of the international ‘standard’ gauge track and through the building of a segregated rail line, not to

Due to the relatively muddy definition of HSR there is some discrepancy about which nation followed Japan as the second member of the global high-speed rail club. A French express train called Le Capitole was unveiled in 1967 between Paris and Toulouse, reaching regularly sustained speeds of 200 km/h. However, the train would operate using what in France was at the time relatively conventional technology (particularly in comparison with the electric-traction Train à Grande Vitesse, or TGV, introduced in that country in 1981), so for this reason Le Capitole is not typically interpreted as a genuine HST. Meanwhile, the Metroliner, a similar train introduced in 1969 in the United States used in services between New York and Washington, employed electric-traction to travel at sustained speeds of around 200km/h; yet its average speeds declined in the 1970s and so this line is also not typically included in the history of genuine HSR development.* While Gourvish (2010) and Nash (1993) list the United Kingdom as the second nation to implement commercial high-speed rail services, thanks to the unveiling of the Intercity 125 in 1976 (also marketed as the ‘High Speed Train’), this line was nevertheless developed using upgraded conventional rail technology on conventional rail tracks.† Thus, with Le Capitole, the Metroliner, and the Intercity 125 all failing to qualify as genuine HSR lines, the second nation to join the global HSR club was Italy, which opened (half of) its Rome-Florence Direttissima line in 1977. This

mention its impressive speeds and unique aerodynamic shape. Like conventional lines, the Shinkansens were originally diesel powered.

* In 2006 Amtrak replaced the Metroliner with the genuinely high-speed Acela Express – the only true HSR system in operation in the US.

† Using Campos and de Rus’ definition of HSR, the ‘Intercity 125’ would thus qualify as ‘higher speed rail’ as opposed to genuine ‘high-speed rail’.

development was then followed by the introduction of the TGV in France in 1981. In Germany, while construction of the 250km/h Neubaustrecke line between Hanover and Würzburg began as early as 1973, it would not be until 1991 that the line would be opened to the public. Spain would follow the subsequent year with its opening of the Madrid-Seville Linea de Alta Velocidad (LAV), just in time for that nation’s hosting of the Seville Expo (see Table 3B, as well as Chapter Five for a more detailed history of early global HSR developments).

Table 3B: Five Founding Nations of the Global HSR Club*

Country	Train (Year Introduced)
Japan	Tokaido Shinkansen (1964)
Italy	Direttissima (1977)
France	Train à Grande Vitesse (1981)
Germany	Neubaustrecke (1991)
Spain	Linea de Alta Velocidad (1992)

Sources: Whitelegg et al. (1993); Gourvish (2010); Estler (2013).

While Canada’s lack of HSR may give the impression that the nation was not considering major rail speed improvements in the late 20th Century, the federal government from the mid 1960s through to the early 1980s did significantly engage the research and development community (which included partners in industry such as Montreal Locomotive Works, United Aircraft Corporation Canada, and later Bombardier; Transport Action Canada 2013; MacDonald 2013). As a spokesperson for Transport Action Canada claimed in a 2009 parliamentary committee hearing, Canada went “from a

* As noted above, there is no consensus on this list, particularly as some (for instance, Gourvish 2010 and Nash 1993) include Great Britain’s Intercity 125 as a genuine HSR system. However, while the train itself was capable of travelling above 200km, it was largely restricted (just like the Canadian Turbo Trains) by its operation on conventional track.

position of leadership [on HSR], with great potential and advanced technologies back in the 1970s,” to “fall[ing] so far behind that our passenger trains have, at best, half the world standard speed” (Standing Committee on Transport, Infrastructure and Communities; 40th Parliament, 2nd Session 2009).

Ironically, as part of this legacy one of the world’s leading bullet train manufacturers is based in Canada; Bombardier claims to have been involved in “almost every high-speed train operating today in Europe” (Bombardier 2013). The company’s primary Canadian rail assembly lines are located in Thunder Bay, Ontario, and La Pocatière, Québec, where it has built streetcars, subway cars and heavy-rail rolling stock for numerous Canadian urban and regional transit systems, in particular the Toronto Transit Commission (TTC) and GO Transit (CBC News 2014b). As discussed in Part Two of the thesis, domestic companies involved in rail manufacturing benefited somewhat from waves of economic nationalism featured in Canada during the post-War years (Smith 2013), in particular during the governments of Lester Pearson (1963-1968) and Pierre Trudeau (1968-1979; 1980-1984) as well as in the wake of various federal reports concerned with increasing US influence in Canadian culture and economy – including the Gordon Royal Commission on Canada’s Economic Prospects (Royal Commission on Canada’s Economic Prospects 1957) and the report of the Watkins Task Force on Foreign Ownership and the Structure of Canadian Investment (Task Force on the Structure of Canadian Industry & Canada 1968). Also discussed in Part Two is the preferential treatment received by corporations like Bombardier when governments were rolling-out neoliberal reforms and selling off assets to the domestic private sector. As

Macdonald (2013) recounts, Bombardier benefitted from numerous acquisitions of formerly state-owned transport enterprises in this manner.

Despite starting off as a snowmobile manufacturer, Bombardier would become a globally-renowned rail and aircraft builder in the 1970s and 1980s, in part through large contracts it received in various dealings with the Canadian government. Although the company's foray into the rail industry originally began with its purchase of the Austrian company Lohner-Rotax in 1970, it was further consolidated in 1975 after acquiring Montreal Locomotive Works (by then a subsidiary of American Locomotive Works) – the very company which had built the original TurboTrain and which subsequently developed the Light, Rapid and Comfortable (LRC) trains that Bombardier would continue to develop for use by VIA in Québec and Ontario. Greenlaw (2007) claims that VIA – as a Crown corporation – has been compelled to continue procuring rolling stock from Bombardier as a means of investing in the domestic rail research and development industry (p.69).^{*} As detailed in Chapter Six, in the mid-1990s Bombardier would join together with SNC Lavalin, AGRA Monenco, and GEC Alstom under the name 'Lynx Consortium' to propose an HSR project in the QWC to the Chrétien government, but the proposal was later shelved after the second phase of the study.

While Bombardier stands poised to answer any potential calls for future HSR business proposals (Bombardier Transportation 2013), the globalization of infrastructure

^{*} Incidentally, Bombardier's aerospace division also draws historical linkages to the Canadian government – mostly through the acquisition of Canadair. The latter was founded by the Canadian government during World War Two to build military patrol craft. After the war the company was sold to the US based Electric Boat Company, which eventually became the American defense mega-contractor General Dynamics and then sold Canadair back to the Canadian government in 1976 (thus becoming a Crown corporation for a second time). In 1986, the Mulroney government oversaw the sale of Canadair to Bombardier, which used the new acquisition to create an aerospace division (MacDonald 2013).

contract bidding and changes to Canadian domestic procurement legislation during the neoliberal period have reconfigured the protectionist dynamic of favouring domestic industries seen during the 1960s through to the mid 1980s (Wilkinson 2006; Dales 2006). This suggests that Bombardier would likely be joined by numerous other multinational corporations in bidding for a contract if an open call for proposals is released by Canadian federal or provincial governments. In addition to Bombardier, both Alstom and Siemens are likely contenders. Though as Renner and Gardner (2010) add, these companies “are increasingly challenged by China’s CSR and CNR. Other companies such as Kawasaki (Japan), CAF and Talgo (Spain), Transmashholding (Russia), Ansaldo-Breda (Italy), and Hyundai Rotem (South Korea) also play important roles internationally” (p.8) in the global HSR industry.

HSR Traction Technologies

There are a number of different propulsion technologies used for HSR trains around the world (with various implications on track structure). The core technologies – diesel, electric, jet turbine-powered, and magnetic levitation – were all considered in Canada as long ago as the early 1980s (VIA Rail Canada 1984). For systems built upon upgraded conventional track, trains require a ‘tilting mechanism’ in order to operate above 200 km/h while turning in order to avoid safety risks: “The principle of the tilting system is to bank the cars in curves to lower lateral centrifugal forces, which cause passenger discomfort. The alternative is to reduce speed, which results in longer trip times, or to increase track super-elevation, which adds infrastructure cost” (Van Horne Institute 2004, p.9). The LRC train developed in Canada in the late 1970s and early 1980s was the first successful active-tilting train in the world, and a technology now used in numerous

countries (Standing Committee on Transport, Infrastructure and Communities; 40th Parliament, 2nd Session 2009). For HSR, conventional tracks cannot be used; special geometric track and train designs are required to enable safe operation. HSR propulsion technologies can be grouped into four main types – diesel traction, other non-electrified technologies, electric traction, and magnetic levitation, as outlined below:

Diesel Traction

When used to propel HSTs, diesel engines generate electricity which drives traction motors on the wheels of each car. This technology is typically referred to as diesel multiple units (DMUs). The benefits include a reduction of damage to the tracks (and thus a smoother ride), the ability for trains to be self-powered, and the possibility of altering the train size (which maximizes efficiency). The drawbacks are the slower speed of DMUs (in the 200 – 250 km/h range) relative to systems fed directly by electric current, as well as the requirement of periodic refueling (Railway Gazette 2000). In Canada, DMUs are a less attractive prospect within a genuine HSR investment scenario: Much of the nation's passenger rolling stock is already diesel traction, and in order for new DMU trains to reach their speed capacity, new track infrastructure would be required. Thus, with DMU trains on new track infrastructure, only moderate reductions in travel time would be realized, but at a very high financial cost that comes with investing in the dedicated track infrastructure. DMUs thus offer great potential for *higher* speed rail in Canada, yet perhaps not for HSR.

Other Non-Electrified Technologies

This category of HSR involves sets which run on Class 7 track or higher* and which are self-powered with non-electric and non-diesel types of motors. The most common would be hydraulic traction trains powered by gas turbines. Both Super Steel (an American firm) and Bombardier have developed turbine-powered trains – the ‘Turboliner’ and ‘JetTrain’ respectively. These have a typical top speed of between 200 and 240km/h, with the advantages of being able to accelerate and stop quickly and having superior tilting mechanisms (Van Horne Institute 2004, pp.14–15). Canada’s own TurboTrain (discussed below in Chapter Five), built by Montreal Locomotive Works with engines made by United Aircraft Canada, was also a turbine-powered locomotive capable of travelling beyond the high-speed benchmark, but it never did so during regular service runs (again, because the track infrastructure was owned and shared by freight companies). As above, a key benefit of this technology is the possibility of reaching high speeds without requiring costly electricity-carrying track infrastructure. Nevertheless, the top speeds are far below those of electric traction trains. Thus, for this class of HSR technology to be viable in Canada in terms of both safety and commercial feasibility, existing tracks would have to be upgraded and purged of freight traffic. Otherwise, like the Turbos, new turbine-powered trains would be relegated to traveling far below their potential speed.

* In North America, track ‘classes’ are designated by the US Federal Railway Administration. Each class is based on the maximum permissible speed for freight and passenger trains. For example, Class 1 tracks can support freight speeds of 10 miles per hour (mph), and passenger train speeds of 15 mph. Class 6 tracks support 110 mph for both freight and passenger trains. Since the turn of the Century the FRA has developed new classes to accommodate new high-speed technologies, such as the Acela Express, which features class 7 (125 mph) and class 8 (150 mph) tracks (Keefe 2006).

Electric Traction

Electric traction trains have the advantage of superior speed (in the 300 km/h to 400 km/h range), placing most trains of this type into the *very* high-speed train (VHSR) category. Electric current is supplied to the train through overhead wires. Well known European HSR lines – including the TGV in France, ICE in Germany and AVE in Spain – serve as examples of electric traction trains. Bombardier has co-manufactured each of these train systems in partnership with Alstom (in the case of the TGV), Siemens (for ICE) and Talgo (for the AVE lines).*

The greatest disadvantage of electric traction trains in Canada is the requirement of building an electrified infrastructure. In Europe such expense has been justified thanks to higher population densities, whereas in sparsely populated North America only 1% of rail track is electrified (Van Horne Institute 2004). Despite the high costs associated with electrification, electric traction trains are likely to be seen as favourable by North American transport planners wanting to move away from integrated freight-passenger systems, given that the higher speeds of the technology produce greater ridership and thus greater returns on the investment. Depending on the source of electrical generation, this type of HSR could also potentially produce less GHG or CAC output per passenger than the other dominant transport modes that run on fossil fuel energy (see Chapter Eight for further discussion on the relative impacts).

* Alstom is a French multinational that is also known for having built the ‘Surfliner’ sets used in California and operated by Amtrak. Siemens, a world-renowned German engineering firm, is particularly active in the global Maglev train market. Meanwhile, Talgo – a private Spanish company started by two business partners in 1942 – has been a major player in Spain’s HSR industry, and is also known for having produced train sets for use in the US Northwest Corridor.

Magnetic Levitation

Magnetic levitation (maglev) trains are propelled by magnets secured to the train which lift the rolling stock off the guideway by virtue of magnetic repulsion. Coils on the ‘track’ are fed an electric current, and the magnetic force is strengthened or weakened in lateral and vertical directions to automatically adjust for various forces acting upon the train (Powell & Danby 2003). Maglev systems are exceptionally fast – typically reaching speeds of between 500 and 600 km/h. By 2013, however, the technology had only been deployed in three nations: Japan (on the Yamanashi line); Germany (the Transrapid line); and China (connecting airport passengers in Shanghai to the city core). Commercially, the extreme high speeds of magnetic levitation, combined with the higher operating costs, place the technology in an unattractive intermediary space between electric-traction HSR and air travel. This is because for shorter intercity journeys maglev is only marginally faster than regular HSR, and yet for longer journeys it is no longer competitive with aircraft. As Potter concludes, “fast trains linked into existing comprehensive systems are highly competitive for journeys up to 600kms and air is equally competitive at distances beyond that, so the prospects for maglev look pretty limited” (1993, p.145). It is therefore an unlikely technological choice in Canada, not least because of Canadian winter weather impacts on the ‘track’ (see below).

Two Realistic Corridors

Only the QWC and CEC have been seriously considered for domestic HSR development (see Figures 1A and 1B). In addition to these two domestic projects, two viable cross-border lines are also commonly discussed, one linking Montreal to New York City, and the other linking Vancouver to Seattle. However, the Canadian portions of the latter two

lines would be of relatively short distance as both Vancouver and Montreal are situated within 65km of the US border, and further, the lines have been proposed as part of Amtrak's operations, not VIA's (Whitman 2010; Paulsen 2009b). Therefore, the discussion of Canada's realistic HSR prospects focuses specifically on the QWC and CEC.

The Quebec City-Windsor Corridor

Efforts to improve rail speeds in the QWC changed qualitatively during the 1960s: In the early post-war years speed improvements were largely internal corporate-driven initiatives at CN and CP, led by the company managers aiming to modernize their fleets, whereas by the end of the decade government agencies and departments (first at the federal level and then additionally at the provincial level) became increasingly involved and interested in the idea of high-speed rail as a *new* potential transport infrastructure to replace 'conventional' rail. Individuals like Norris Crump (president of CP from 1955-1964, and chairman thereafter until 1972), Ian D. Sinclair (Crump's successor at CP), Donald Gordon (CN president from 1950 to 1966), and Norman MacMillan (CN president from 1967 to 1974), played important roles in improving rail speeds across the country through dieselization and new traffic control systemization and computerization (Murray 2011). At CP the period from 1948 to 1972 is known as 'the Crump era' – an epoch during which the company undertook modernization efforts and also diversification into new areas of the transport market; a similar time period is known at CN as one of modernization as well (Ibid.). Despite these efforts, it was clear that there was still room for significant improvement if passenger rail was to be competitive with automobiles and (increasingly at the time) airplanes; some critics (most notably,

Lukasiewicz 1976) would claim in the mid 1970s that the nation's entire railway system was characterized by backwardness, or 'socio-technological obsolescence', requiring complete overhaul.*

In the 1970s a focus on feasibility studies took root in the QWC. As Benzie (2009) notes, there have been at least 15 feasibility studies of HSR in the corridor since then, the most important of which have either been tripartite efforts between the federal government and the governments of Québec and Ontario, or studies prepared by VIA Rail. One of the first government-led studies, focusing on a range of intercity travel options (not just HSR) was conducted by the Canadian Transport Commission (Soberman et al. 1970). The report coined the phrase 'Quebec-Windsor Corridor' and concluded that the best option at the time for passenger rail modernization involved investments in *existing* track paired with the introduction of new technologies along the lines of the Turbo Trains (which could reach higher speeds using existing track).†

One of the first federal-level studies focusing *solely on HSR* was produced by VIA in 1984. It outlined three viable choices available to governments: a) maintain the existing diesel-powered conventional system shared with freight service, with average travel speeds of 155 km/h (in other words, *not* develop true HSR systems); b) develop new "state-of-the-art" systems on passenger-only tracks reaching average speeds between 200 km/h and 300 km/h; or c) build a "futuristic" maglev system travelling at an average

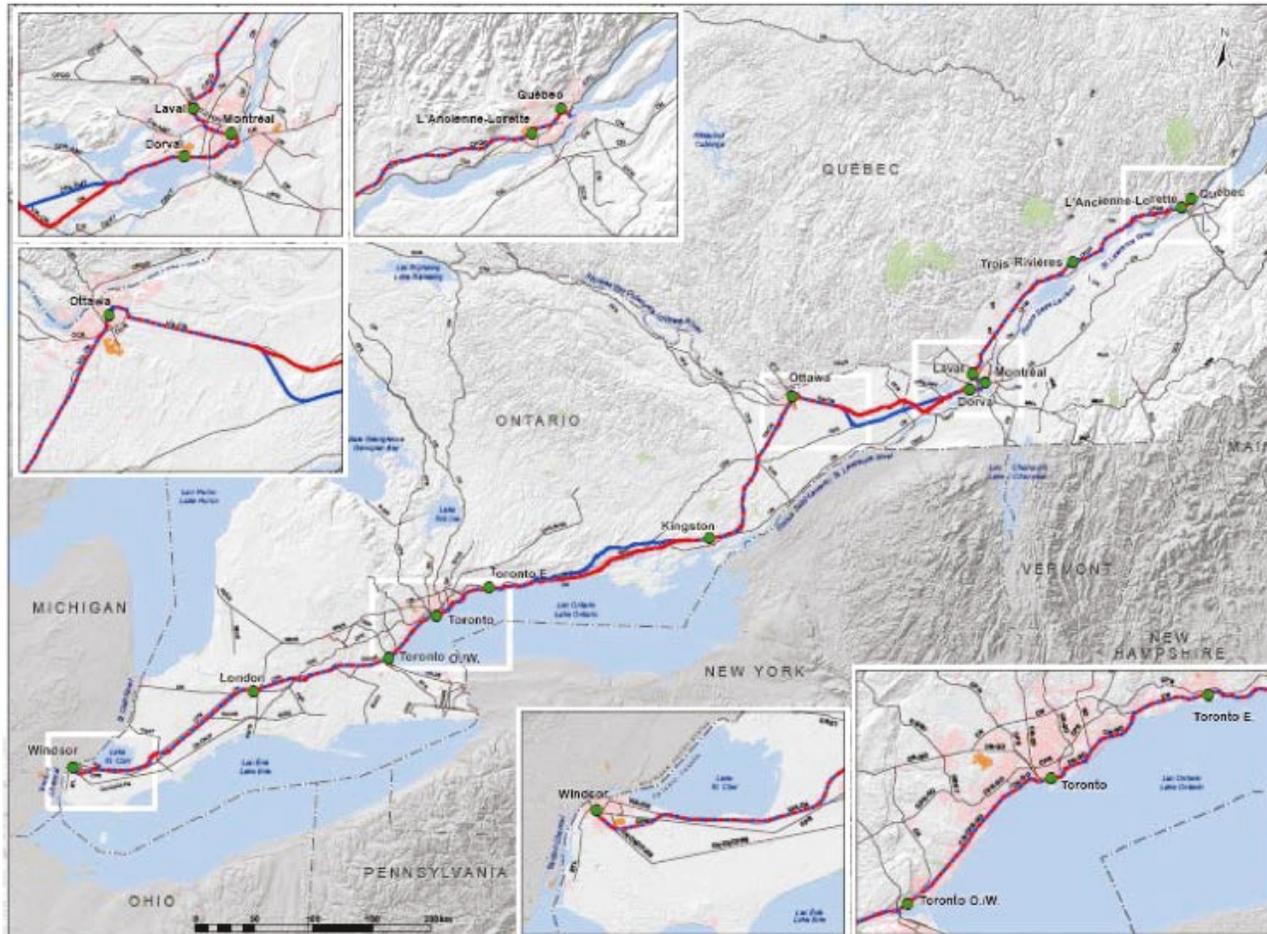
* Though Lukasiewicz notes that his critique was "not an orthodox view" (p.240).

† As detailed in Chapter Five, the federal government's attention was thus diverted from rail to air, with a particular emphasis on the development of Short Takeoff and Landing (STOL) services in the corridor, which the Science Council of Canada claimed would eventually displace the need for passenger trains altogether (Soberman 1995; see also Lukasiewicz 1976, pp.229–30).

of 400 – 450km/h. Unlike the earlier CTC study, the VIA report found that “the Canadian government could, if it wished, provide Canada with a high-performance railway service between Montréal, Ottawa and Toronto (300km/h)... while at the same time improving VIA’s financial position” (VIA Rail Canada 1984, p.8). Despite this, the government again chose the first option of incremental improvements, and although this was not intended as a long-term solution, it was nevertheless the *de facto* path taken for the subsequent thirty years (see Part Two). Ironically, the 2011 study by EcoTrain offered nearly the same possibilities for the corridor, considering both a higher-speed diesel powered train of 200 km/h and an electric HSR system of 300 km/h (it dropped the idea of Maglev development).

According to the EcoTrain consortium the typical electric HSR train set in the QWC would feature either 6-8 coupled cars or 8-10 articulated cars, at a length of 200 meters and with a capacity of 400 passengers (EcoTrain 2011). The full corridor length would be divided into three shuttle portions, the first between Québec City and Montréal via Trois-Rivières; the second between Montréal and Toronto via Ottawa; and the third between Toronto and Windsor via London (see Figure 3A). Whereas conventional diesel-electric rail service between Montreal and Toronto (via Ottawa) – the busiest section of the corridor – takes an average of 5 hours and 12 minutes (an average speed of just over 100km/h), the higher-speed diesel option with infrastructure upgrades would bring the trip down to 3 hours and 38 minutes (an average speed in the range of 150 km/h); the very high-speed electric option would take only 2 hours and 47 minutes (averaging speeds of 200 km/h) (EcoTrain 2011).

**Figure 3A: Representative Routes and Stations
Quebec City – Windsor High-Speed Rail Corridor**



Source: EcoTrain (2011, p. S6; reprinted with permission)

By comparison, the trip by car takes approximately 5 hours and 20 minutes, and flight times between Montreal and Toronto typically take 1 hour and 10 minutes (averaging speeds of 450 km/h). Rail advocates (for instance, VIA Rail 2013; Paulsen 2009a) note that since rail stations are typically located in downtown cores, rail travelers avoid the delays faced by air travelers who are required to make the trip to airports outside of the city core.* Further, wait times and boarding times are typically shorter for trains compared to air travel, thanks to multiple loading doors and a shorter security and check-in process at train stations. For this reason an electric HSR service is said to be competitive with air travel in terms of door-to-door trip times (EcoTrain 2011, p. S-7).

Perhaps unsurprisingly, the expected costs of building an HSR system in the QWC have increased for each new feasibility assessment (even when accounting for inflation). An early study in 1984 found the expected investment costs for a dedicated HSR system to be \$2.4 billion (VIA Rail Canada 1984). Five years later a follow up study upgraded the costs to \$5 billion (VIA Rail Canada 1989). By 1991 the project was found to require an investment of \$7.1 billion (Ontario/Québec Rapid Train Task Force 1991), an estimate which grew to \$10.3 billion by 1995 (Transport Canada et al. 1995), and subsequently \$11.1 billion in 1998 (House of Commons Standing Committee on Transport 1998; all costs in 2007 Canadian dollar equivalents, see Gravelle 2007). A 2011 study of the QWC placed the expected cost at \$21.3 billion (EcoTrain 2011; 2009 dollar equivalent), and expected a net loss to the project of \$992 million (See Table 3C).

* This claim nevertheless avoids mention of the access time required for rail travelers to come *into* the city core when they reside or work in suburban areas – an increasingly common scenario in Canada (see Artibise & Stelter 2006).

For this reason, the study advocated only building the portion of the route between Toronto and Québec City, which was found to have a positive net present value of \$257 million (a ‘profit’ which would accrue over the project’s 30-year lifetime).

Table 3C: Costs and Net Present Value (NPV) of HSR in the QWC*

<i>Representative Costs</i>	
Total Cost of Investment	\$21.3 billion
Total Cost of Operations & Maintenance	\$520.2 million per year
<i>Representative Benefits</i>	
Net Present Value (NPV) of Government Investments	\$18.2 billion for wholly public case \$9.2 billion for public-private case
NPV of Benefit to Public Safety	\$2.5 billion
NPV of Benefit from Reduced Emissions [†]	\$96 million
NPV of Entire Project	- \$992 million

Data source: EcoTrain (2011).

In its market assessment EcoTrain found that there were approximately 92 million intercity passenger trips made within the QWC across all modes. However, only a third (32 million) were made between the large metropolitan areas in the corridor – Québec City, Montréal, Ottawa, Kingston, Toronto, London and Windsor (also known as the primary intercity markets) – urban areas where stations would be located. Table 3D indicates the study’s forecasted breakdown on the future market share of each mode as well as 2006 data on the market share for each mode. As the table indicates, EcoTrain assumed that a new HSR service would result in the discontinuation of VIA Rail’s

* All values are based on 2009 Canadian Dollars and the 300 km/h technological scenario. All Net Present Value figures are based on a 30-year period (2025-2055) with a discount rate of 4.2%.

[†] This would include emissions of both GHGs (Carbon Dioxide, Methane, Nitrous Oxide) and criteria air contaminants, or CACs (Carbon Monoxide, Nitrogen Oxides, Volatile Organic Compounds, Sulfur Dioxide, and suspended particles).

conventional rail services within the corridor (thereby allowing the new HST line to incorporate much of the conventional rail traffic).

**Table 3D: Person Trips within the QWC’s Primary Markets
Existing and Forecasted Modal Shares for Intercity Transportation**

	Air	Bus	Auto	Conv. Rail	HSR*
Existing (2006 data) (of 32 million trips)	6%	6%	82%	6%	N/A
Forecasted (2031) (of 45.2 million trips)	5%	5%	72%	N/A	18%

Source: EcoTrain (2011).

In short, EcoTrain’s hypothetical scenario expects an HSR ridership of just over 11 million trips by 2031 (of which the primary markets account for 79%, or 8,779,000 trips). Of that forecasted demand for HST, a slight majority (60%) would be derived from people switching from automobiles, while only 10% would be from air travel. Meanwhile, 27% of HSR’s forecasted demand is merely a result of the elimination of VIA Rail services in the corridor (as explained above), which incidentally produces a net loss of travelers from rail to bus travel (expected to grow from discontinued conventional rail services thanks to their ability to directly serve secondary markets). Finally, 6% of HSR’s forecasted demand is derived from the generation of new journeys (trips that would not have occurred if HSR had not been introduced).[†]

* The model assumes an electric high-speed train with a speed capacity of 300 km/h.

[†] In other words, 94% of HSR’s demand is expected to be derived from people choosing HSR over other modes. The study does not consider whether the introduction of a new mode in the transport system would have a positive feedback on demand for *existing* modes – a conundrum explored in Chapter Eight. Pagliara and Preston (2013) note that despite a rich literature focusing on the effects of introducing HSR on the modal split, there exist very few studies that concentrate on induced demand by HSR. Part of the problem, they note, is that “modeling induced travel demand is not an easy task due to the high number of variables playing which make the analysis complicated and difficult to generalize” (p.44). Using the HS1 in Britain

When the decision to carry out an updated feasibility study was originally announced in 2008 both the Québec and Ontario governments expressed enthusiasm, with the provincial Premiers at the time claiming that HSR would offer significant social, ecological and economic benefits (Benzie 2009; CBC News 2008b). After the study, however, the response was largely muted. Meanwhile, the federal government wanted to bury the idea, lamenting the “significant public expenditure” required in the context of difficult “fiscal circumstances” (Transport Canada 2013). By 2013 the prospects for an HSR line connecting the major cities of Québec and Ontario were therefore not very promising, at least in the near term future.*

The Calgary - Edmonton Corridor

The CEC has also been under consideration for high-speed rail since the mid-1970s, when then leader of the Alberta New Democratic Party (NDP) Grant Notley requested a preliminary assessment of capital and operational costs for a high-speed rail system between Edmonton and Calgary (Legislative Assembly of Alberta 1976). Additional internal government investigations carried out in the mid 1980s and 1990s determined that the project was premature due to lack of demand. Yet as intercity travel intensified in Canada’s energy-booming province, so too would interest in efficient high-speed transportation between its two biggest metropolitan areas (Standing Committee on

as a case study, they found that the average increase in user satisfaction from HSR (an increase of one ‘unit’) resulted in a 3.15% increase in the number of total trips in the transport corridor.

* Nevertheless, at the time of writing (fall 2014) the Ontario provincial government under Premier Kathleen Wynne announced its plan to introduce a high-speed train between Windsor and Toronto by 2025 (CBC News 2014d). This ‘go-it-alone’ approach was the province’s way of moving forward on HSR in one part of the corridor without requiring inter-jurisdictional cooperation. It is too early to comment on how (or whether) the plan will take shape.

Alberta's Economic Future 2014). While the provincial government has secured parcels of land for a potential rail right-of-way, there has been no official political commitment to take on an HSR project in the province. In 2013 the provincial government conducted a review of the idea, only to conclude in its final recommendations that the government "should *not* invest in a high-speed rail transit system in the Edmonton-Calgary corridor at this time because the population of the corridor is not sufficient to support the profitable operation of such a system" (Ibid., p. 2). Like the federal government, Alberta was concerned about the large upfront public expenditures associated with HSR development.

Nevertheless, the scale and pace of change in the CEC travel market is remarkable and intercity transportation per capita is higher than average: Transport demand between the main Albertan cities of Calgary, Edmonton and Red Deer is expected to triple by 2051 even without the introduction of HSR (TEMS & Wyman 2008). This growth follows in the wake of already significant growth in transport demand in the CEC during the 20th and early 21st Centuries.* Before 1890 travel between the two main cities (roughly 300 km apart) took place primarily by stagecoach. It was a four-day journey. The *Calgary and Edmonton Railway Company* was incorporated by the federal government with plans to build tracks between the two cities, although it never planned to actually operate a train, and so *Canadian Pacific* was also involved in the project from the outset. Regular passenger rail services offered by *CP* became available in 1892. The train journey brought the trip down to an impressive 12 hours. Diesel locomotives were

* As a 2014 legislative review of HSR points out, the volume of travel within the CEC is consistent with a population four to five times the province's actual size (Standing Committee on Alberta's Economic Future 2014, p.4).

introduced in 1949, further reducing the trip to 3.5 hours. By 1969 there were three daily trains between the two cities (Pettypiece 2010), but highway investments in the 1950s and growing automobile traffic provided a cheaper and more convenient method of travel. In 1985 rail service was discontinued in the CEC, and no passenger rail service has been available since (Murray 2011). By 2013 a flight between the two cities took 45 minutes,* and between *Air Canada* and *WestJet* there were roughly 30 flights between the two urban areas (each direction) every day.

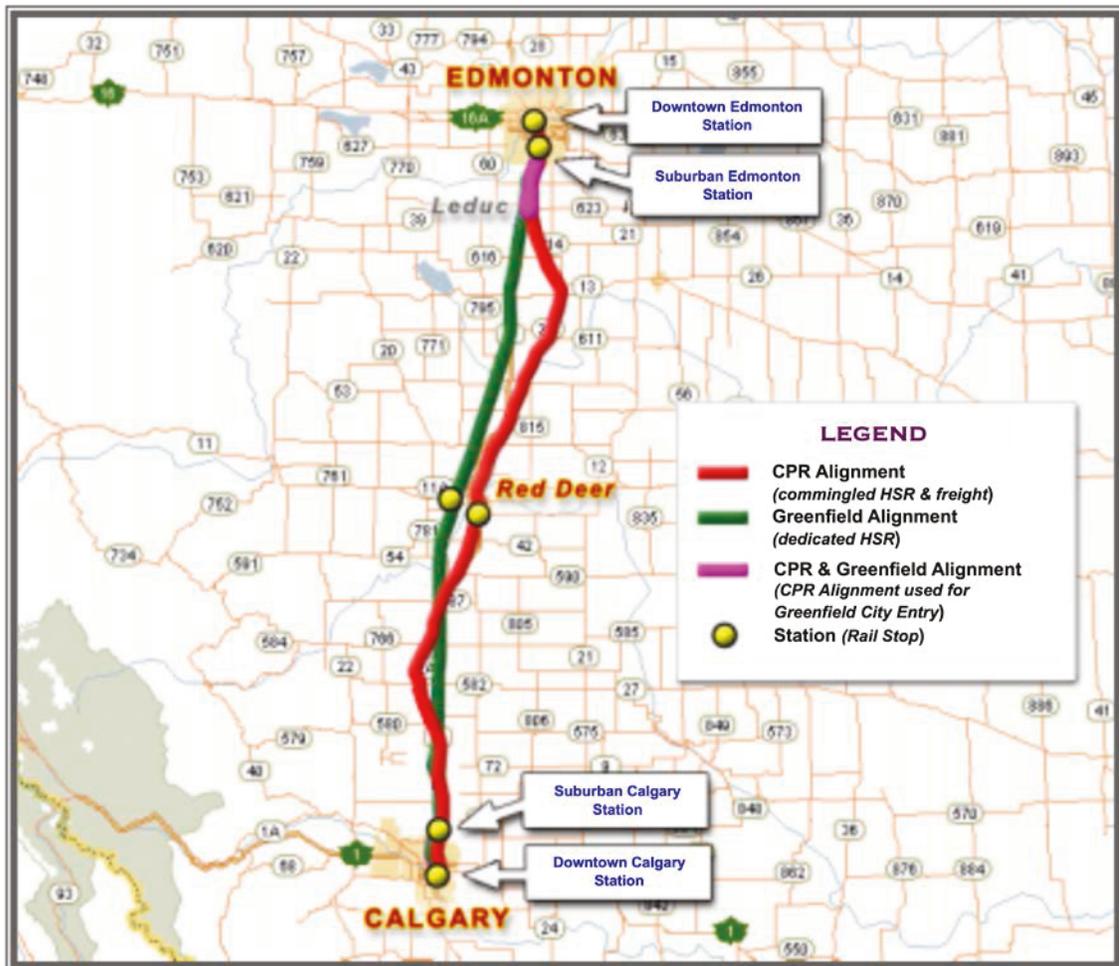
As in the QWC, the two technological options considered are diesel-electric trains travelling on existing tracks, or an entirely new track built to support electric traction trains. The latter, being the only genuine HSR option, would feature three core stops between the downtown stations of the two metropolitan areas. In addition to a midway stop in Red Deer, the other two stops would either be located in suburban areas of Southern Edmonton and Northern Calgary, or the respective international airports of those two cities (See Figure 3B).

As with the QWC, the costs of HSR in the CEC have grown higher with each assessment at a rate higher than inflation. The Van Horne Institute's 2004 study priced an electric HSR at \$3.4 billion (\$2004). An update of the study in 2011 listed a price of \$4.75 billion – an increase of 39% where inflation was only 14% during this period. Both Van Horne and TEMS expected a positive net present value from the investment after a project lifetime of 30 years, thanks to the economic value of associated social and

* The Edmonton and Calgary international airports are located about 30km and 20km away from each city's downtown core, respectively. As such, the elapsed downtown-to-downtown travel time by air is significantly greater than 45 minutes.

environmental benefits (see Table 3E). Nevertheless, the Government of Alberta displayed a high degree of concern regarding the high upfront capital costs in its 2013/14 legislative review of HSR. For that study it sought professional and expert opinion which found HSR demand would be insufficient to result in an operating profit.

**Figure 3B: Representative Routes and Stations
Calgary – Edmonton High-Speed Rail Corridor**



Source: TEMS, Inc. & Oliver Wyman (2008, p.3; reprinted with permission)

The government’s final report repeatedly refers to evidence provided by Dr. Siemiatycki (an expert witness at the Committee hearings) and CPCS (a transport consulting firm originally founded within CP Rail, but which became an independent firm in 1986), both of which “cautioned against relying on estimates of ridership on proposed HSR systems, noting that such estimates are often inaccurate and do not yield the predicted ridership and resulting revenue” (Standing Committee on Alberta’s Economic Future 2014, p.5).

Table 3E: Costs and Net Present Value (NPV) of HSR in the CEC*

<i>Representative Costs</i>	
Total Capital Cost	\$4.75 billion
Total Cost of Operations & Maintenance	\$132 million per year + 2%
<i>Representative Benefits</i>	
NPV of Government Investments	\$3.8 billion for wholly public case \$1.09 billion for public-private case
NPV of Public Benefits [†]	\$2.6 billion
NPV of Benefit from Reduced Emissions [‡]	\$136 million
NPV of Entire Project	\$8.5 billion

Source: Van Horne Institute (2004); Shirocca & Anthony Steadman (2011).

According to the TEMS & Oliver Wyman 2008 market assessment, there were 50 million passenger trips in the province in 2006 across all existing modes, and that volume was expected to grow to 105 million by 2031 and 149 million in 2051. The expected diversion

* In 2011 the Van Horne Institute conducted a cost update for the capital costs of the CEC HSR project (a 300 km/h electric technological scenario). It increased its capital cost update by 39%, whereas the Bank of Canada’s online inflation calculator only noted a net inflation of 14% between 2004 and 2011. Using the Van Horne’s inflation value of 39% over that time period, values were produced for 2011 Canadian Dollar equivalents of other figures calculated by the institution in 2004. Net Present Value figures are based on a 30-year period with a discount rate of 3%.

[†] Includes “travel time and cost savings for system users, accident reduction and environmental benefits” (Van Horne Institute 2004, p.116).

[‡] This value focuses solely on GHGs; it does not include CACs.

from competitive modes to an electric HSR was largely the result of growth in overall traffic. A cost update by the Van Horne Institute (Shirocca Consulting & Anthony Steadman & Associates 2011) noted travel times within the CEC have increased on average by 0.5 per cent per year, indicating a trend of increasing congestion on the highways. Nevertheless, the vast majority (over 95%) of intercity trips in the CEC took place by automobile and this volume of traffic would continue to take place even with the introduction of HSR. The latter would result in a 3% diversion from automobiles, a 35% diversion from bus travel, and a 46% diversion of air travel.***** Table 3F shows both the existing (using 2006 data) and forecasted (to 2031) market shares within the CEC across the modes.

**Table 3F: Passenger Trips within the CEC
Existing and Forecasted Market Shares of Intercity Transportation**

	Air	Bus	Auto	Conv. Rail	HSR*****
Existing (2006 data) (of 9.9 million trips)	6%	3%	91%	N/A	N/A
Forecasted (2031) (of 21.3 million trips)*****	0.91%	2.14%	92.1%	N/A	4.84%

***** As an example, there were 616,000 air trips per year in 2006 in the CEC. TEMS expected this volume to grow to 1,078,000 in 2016 *without* the introduction of HSR. With HSR, however, there would only be a forecasted 495,000 air trips, as the new mode would capture 583,000 trips (or 46%) of the air market share.

***** The model assumes an electric high-speed train with a speed capacity of 320 km/h.

***** The figures listed are for TEMS & Wyman’s calculated market shares for the base year of 2011, for the entire province of Alberta. However, the study notes that “the market shares are consistent through the time horizon”. Given its expected ridership of 5.236 million passengers in 2031 for this technological scenario in the ‘central case’ (between ‘worst’ and ‘best’ case forecasts), it is inferred that the total provincial volume of trips in 2031 is 108 million trips. Given that in 2006 the study found that there were 49,853,000 trips in the province, and 9,839,000 in the CEC specifically (in other words, 19.74% of the province’s total trips occurred in the CEC), we can infer here that 21.3 million trips are forecasted in 2031. This assumes, however, that the proportion of the province’s total travel that occurs in the CEC remains constant over time.

Source: TEMS & Wyman (2008).

While the volume of HSR travel was expected to grow over the project lifetime (through to 2051), the relative share of the market remains roughly the same throughout the project lifetime according to TEMS & Oliver Wyman (p.72). In other words, it is expected that HSR will only ever carry roughly 5% of the total intercity transport volume in the CEC (a rate far below the QWC, which expects HSR lines to carry 18% of the corridor's transport volume).

Material Obstacles to Canadian HSR Development

There are a number of obstacles in the way of Canadian high-speed rail development. Most notably these include the requirement to have a continuous and dedicated track without any grade crossings, the limitations of curve radii, Canada's northern climate, electrification, low population densities, and demographic changes at the hand of suburbanization. These challenges do not necessarily mean HSR is an impossible endeavour; however, they are obstacles which intimately shape the feasibility of implementing the technology, in most instances by increasing the cost of development. As Campos and de Rus have noted, "building, maintaining and operating HSR lines is expensive, involves a significant amount of *sunk* costs and may substantially compromise both the transport policy of a country and the development of its transport sector for decades" (2009, p.19). With cost a priority concern for governments wanting to ensure the profitability on investments, such obstacles often work against HSR's favour.

A Distinct and Separated Track

Given all of the farmland, roads, and existing infrastructure within the QWC and CEC, the requirement for a distinct track separate from the freight tracks currently rented by VIA Rail poses significant difficulty and expense. It means building bridges, overpasses, or underpasses, and working around existing developments in urban and peri-urban areas. Unlike conventional rail, where level crossings are permitted (sometimes with fatal consequences, see Chua 2013), high-speed rail systems pose too high a risk for crossings to be permitted. There are roughly 40,000 level crossings in Canada. As a measure, between 2003 and 2013 there were 71 accidents at rail crossings within the QWC alone. The severity and frequency of accidents with trains travelling two to three times faster than current conventional trains would increase dramatically. To make way for contiguous separated tracks, land would inevitably have to be expropriated or leased on the long term from farmers and other owners whose land would be split by the rail right-of-way, and accommodations would have to be made for foot and vehicle traffic to go over or under the track at numerous points along the route. This reality poses the likely requirement of significant effort and capital, not to mention the specter of protracted legal cases from landowners who have had their property expropriated or altered against their will. Further, the process of negotiating land acquisitions and grade crossings can be a Sisyphean task. Former CEO of VIA Rail, John Marginson, explained this in reference to efforts at negotiating the closing of rail crossings with private landowners on a short piece of track within the QWC:

On that relatively short piece of track we have ... a hundred crossings, over 75 miles or so. We've been able to contact private landowners who have private crossings over that 75 miles and we've slated for 2011 to close about half of those crossings. But I'm telling you it's tough slogging. It's

tough work, because basically you have to go and knock on doors, go into people's kitchens, sit down at the table, and talk about this thing (Standing Committee on Transport, Infrastructure and Communities 2009).

The requirement for a distinct track separate from freight systems is thus a major obstacle to the implementation of HSR, and may prompt transport planners to consider whether it may be easier (and cheaper) to merely focus on incremental improvements to existing infrastructure to yield higher speed rail rather than a bona fide HSR system.

Maximum Curve Radii

The limitations above relate to the maximum curve radii that can be built into tracks – particularly within urban and peri-urban areas. High-speed ground transportation is limited by the extent of a turn – or ‘bend radius’ – because of the g-force experienced by passengers. As a general rule, the faster a train travels the wider the turn required to avoid passenger discomfort (Musk 2013). This tends not to be a challenge for long stretches of track *between* urban areas, yet as the trains approach urban cores the proposed routes would have to find a way to traverse around existing infrastructure (EcoTrain 2011, p.6; TEMS & Wyman 2008, p.3). The outcome is that trains will in most cases have to slow down as they enter metropolitan areas. For HSR this is a major obstacle with no easy solution. It means that HSTs will only be able to travel at their maximum velocity once outside of dense urban areas, or otherwise spend the additional cost for bridges, tunnels, overpasses, demolitions, and expropriations required to allow for straighter continuous track at urban approaches.

Canada's Northern Climate

Winter conditions present a number of obstacles to high-speed rail operations, and contributing to the challenge is the lack of extensive research into the topic (though there are some exceptions; see Firstpost 2012). Such challenges have been experienced and in some cases overcome in Scandinavia, where HSR operation does take place during winter. However, HSR lines in Sweden, Norway and Denmark do not typically exceed 200 km/h, and as one Scandinavian study of HSR Winter operations notes, “winter problems... are expected to get worse with the increase of speed” (Kloow & Jenstav 2006, p.9). While many other nations with HSR do operate winter services (Japan, USA, China), there does not appear to be any precedent for HSR operation in the 300 km/h or higher range in a harsh winter climate similar to that found in Central Alberta or Southern Ontario and Québec. Currently, the conventional rail system in Canada deals with significant winter problems – most notably frost heaves, tunnel ice buildup, and steel track fractures. As a safety precaution many of Canada’s existing freight and passenger trains travel slower in winter time (Martin & Hendry 2011). Snow can pose a problem to rolling stock, as blowing snow whirls into the wheel wells of trains, affecting air intake and disc brake systems. Under certain conditions ice build-up can lead to similar problems (Kloow & Jenstav 2006). In short, HSR is relatively untested in Canadian winter conditions; the costs to monitor track and equip rolling stock and infrastructure for safe winter operation are likely to be higher in Canada, and there may be extended periods of testing required to ensure that it is even possible to operate HSR within a typical Canadian winter.

Electrification

The electrification of intercity railways is by no means a new idea in Canada. By 1893 there were 256 km of electrified railways linking up the urban centres of Montreal, Toronto, and Vancouver with respective outskirt towns (Glazebrook 1964). In 1921 the Ontario Hydro Electric Power Commission investigated the idea of introducing electric trains between Toronto and regional urban areas (including Hamilton, Niagara Falls, Guelph, St. Catharines and Bowmanville); yet as a testament to how much Canadian transport policy has evolved over the decades, the idea was deemed unfeasible at the time because it would introduce a competitive market (thereby affecting Canadian National's passenger services and diminish the impact of new spending on public highways).^{*} Despite this a number of short haul *suburban* rail operations were electrified and by 1933 were carrying over half a million passengers (Glazebrook 1964, pp.243–44). Within the same period (1920s to mid-30s) many of the private operators of suburban electric rail operations pulled up the tracks and entered the burgeoning suburban bus market.[†] In effect, the major expansion of roads into suburban areas killed the intercity electric train in Canada before the electrification of rail lines was taken up across the country (Ibid.).

^{*} In contrast, since 1967 Canada's transport policy has largely been based on fostering and ensuring competition within the sector.

[†] For its role in producing a similar outcome in the United States, General Motors along with a number of other colluders were eventually found guilty of attempting to monopolize the interstate transport market in what is now known as the 'GM streetcar conspiracy' (Wilkins 1995).

Despite the historical flirtation with electric rail, intercity passenger trains in Canada have mostly been powered by fossil fuels (first through coal to generate steam and later through diesel and – in the case of the TurboTrain – diesel-powered gas turbines). This means that in order to introduce HSR in Canada, not only will new track infrastructure be required, but the electrification of that new track is also necessary. The project would also be very expensive: The Government of Ontario has estimated the capital cost of building 560 km of electrified track from Niagara Falls through to Peterborough to total \$28 billion (Maloney 2010), a figure that is difficult to reconcile with the EcoTrain study which found that the capital cost of building a fully electric rail infrastructure from Québec City to Windsor – a distance of approximately 1150 km – would total only \$10.3 billion (EcoTrain 2011, p.70). Electrification is further complicated because of the coordination needed with provincially-based power companies, which have jurisdiction over the electricity sector. HSR operations place quite a toll upon electrical infrastructure, with the typical electric traction engines drawing 10 megawatts to reach such benchmark high speeds (Wüst 2007).*

Low Population Densities

As Ryder (2012) points out, higher population densities in Europe and Asia mean that more passengers are available in an HSR system's catchment area: "Density in France is just under 260 per square mile; in Germany it is 610.6; in Belgium 890.8, in the UK

* Wüst (2007) points out how a special high-speed rail demonstration put on by French TGV manufacturer Alstom in 2007 placed such a toll on the electrical infrastructure that the overhead wires and the train's propulsion system had to be "junked" after the record setting stint. The train reached a top speed of 574.8 km/h.

655.2, and even in Spain, it is 210.1” (p.303).^{*} In contrast, population density in Canada is amongst the lowest in the world, at about 10 per square mile. Of course, the various corridors where HSR is considered are far more dense than at the national level; both the QWC and CEC are Canada’s first and second most densely populated corridors respectively, containing eight of the country’s ten largest metropolitan areas and together holding 60% of the nation’s population (TEMS 2008). With a population of 2.7 million people in an area of approximately 23,800 square miles, the CEC’s density is currently at approximately 113 per square mile (Statistics Canada 2013a) – considerably less than the European or Asian figures, but nevertheless higher than national figures. Meanwhile, with just over half of the nation’s population in an area of approximately 68,000 square miles, the QWC maintains a population density of roughly 265 per square mile (extrapolated from Environment Canada 2002).[†] Thus, while lower population densities are certainly a challenge for HSR in Canada, if the actual rail corridor regions are considered on their own the densities are more akin to those in France and Spain (at least within the QWC). The CEC, on the other hand, may just not have the requisite density to make HSR worthwhile. This was the finding of the 2014 assessment of the CEC by the provincial government, concluding that “it may potentially take decades before the

^{*} These figures convert to per capita square kilometers as follows: 260 sq miles = 673 sq km; 610 sq miles = 1580 sq km; 890 sq miles = 2306 sq km; 655 sq miles = 1696 sq km; 210 sq miles = 544 sq km. Meanwhile, 10 sq miles = 26 sq km.

[†] I use miles here for easier comparison with the figures provided by Ryder. The equivalent densities in per capita square kilometers are 293 people per square kilometer in the CEC and 686 people per square kilometer in the QWC.

population and traffic levels will be large enough to support HSR” (Standing Committee on Alberta’s Economic Future 2014, p.5).

Suburbanization and Automobility

Demographic transformations in Canadian cities – including Toronto, Montreal, Ottawa, Québec City, Calgary and Edmonton – have undoubtedly re-shaped the market for transport between them. In the case of these six cities specifically there exists a corporate-government-production complex which fuels additional transport demand between them: For example, Calgary serves as home to corporate and management offices of many of the energy corporations operating in Northern Alberta, which use Edmonton as an industrial and processing hub; at the same time Edmonton also serves as the political capital. The resulting mix generates considerable volumes of business-related travel (Alberta High Speed Rail 2013). A similar dynamic exists between the large financial and business headquarter cities Toronto and Montreal, and the political capitals of Ottawa and Québec City. These six cities are among the seven largest urban areas in Canada.*

Nevertheless, in Canada post-War urbanization took shape to a significant degree *outside* of city cores, and this has had major implications on the modal choices for intercity transport. The growth of suburban areas, and even exurban areas, has largely continued unabated since the 1970s to the extent that they now hold more than two thirds of the nation’s population. These communities feature low density and car-dependent

* Vancouver is the only city missing from the list, ranked as Canada’s third largest metropolitan area.

lifestyles (Cook 2013). While less than a fifth of the Canadian population lives in a rural area, Canadians are increasingly seeking to live in those areas just outside core urban developments: “More and more Canadians are settling outside metropolitan areas, choosing the urban fringe areas. The increase in Canada's rural population thus does not indicate a return to farming; rather, people are seeking out ‘rural’ environments that are close to a city” (Artibise & Stelter 2006). As Artibise & Stelter add, “these trends all suggest that the decline of the monocentred metropolis in favour of the polycentric urban field will continue” (Ibid.). To be sure, polycentric urbanization in Canada *includes* growing density in urban cores, particularly in large cities like Toronto, Montreal and Vancouver, thanks to booming condo markets in those cities (Ireland 2012);* however it must be understood that the character of Canadian ‘urbanization’ has not necessarily resulted in larger markets for centrally-located passenger rail stations. Further, Canadian demographic shifts raise important questions about how residents will travel between and within cities in the coming decades. At one level, the growth of suburbia and exurbia and the corresponding dependence on automobility lends itself to the expansion of highways and the continued demise of public transportation modes in short corridors. This casts doubt on the type of urban regeneration envisaged by Florida (2002), in which cities are presumably being rejuvenated economically and culturally by the development of a new ‘creative class’ of young professionals, intellectuals and techno-cultural workers. While it is the latter image of the regenerated urban core which fits so well with the notion of

* At the same time, many condo buildings have seen very low occupancy rates; in some downtown neighbourhoods in Vancouver up to a quarter of condos were empty or ‘occupied’ by non-residents (Marlow 2014).

sleek, comfortable modes like high-speed trains connecting the ‘economic agents’ of Canada’s important cities together, a more realistic image of Canadian urban transformation must also include the reality of increasing suburban and exurban development, highly dependent on the automobile for both short haul and medium haul travel.

Conclusion

In Canada, the two most realistic spaces of HSR development are the Calgary-Edmonton and Québec City-Windsor corridors. While different technological options have been considered, the most realistic option for genuine HSR in both corridors is, in effect, an electric traction high-speed train on dedicated tracks: Even though a new hypothetical train system which could reach sustained speeds of over 200 km/h would technically qualify as HSR in Canada, such a system would require dedicated track infrastructure in order to operate safely. Yet if the decision to build new track is made, it is likely that decision-makers would want to optimize the speed of the resulting system, so as to maximize revenues. Nevertheless, there are a number of obstacles and hurdles which would need to be overcome if electric traction HSR is to become a reality in the CEC or QWC, including building new electricity-fed track infrastructure with minimal turn radii that can handle Canada’s extreme climate, as well as the nation’s predominant culture of automobility, suburban growth, and relatively low population densities.

CHAPTER FOUR: (Ecological) Political Economic Narratives of High-Speed Rail

“I like [the high-speed rail plan] because it fights climate change, it fights traffic congestion, so it enhances our productivity levels, it creates jobs and it enhances our quality of life.”

- Ontario Premier Dalton McGuinty (quoted in Benzie 2009).

“A project of this scale should be seen as an opportunity, not only to provide new transportation infrastructure, but to stimulate [domestic] industrial development and job creation.”

- Alberta Federation of Labour (2013).

“While it may sound appealing, hard evidence from around the world shows that the idea of cost-effective high-speed rail in Alberta amounts to fantasy.”

- Op-ed by Marco Navarro-Genie and Brianna Heinrichs (2012).

Introduction

This chapter delves into the cultural imagination, depicting a fractured debate (or a discursive ‘battle of ideas’) regarding the merits and circumstances of high-speed rail development in Canada. As the epigraphs above demonstrate, there are a variety of opposing viewpoints regarding whether HSR projects *should* go forward in the CEC and QWC, and if so, what political economic arrangements would serve as the *optimal* backdrop. In part this debate stems from disagreement seen within the broader literature focusing on the impacts of HSR development around the world. For instance, in terms of economic impacts, proponents of global HSR development speak of inevitable spinoffs and economic gains resulting from the way infrastructure investment leads to job creation, spatial agglomeration and induced demand (for instance, see Chen 2013), whereas others argue that insufficient demand and continued state subsidization are both

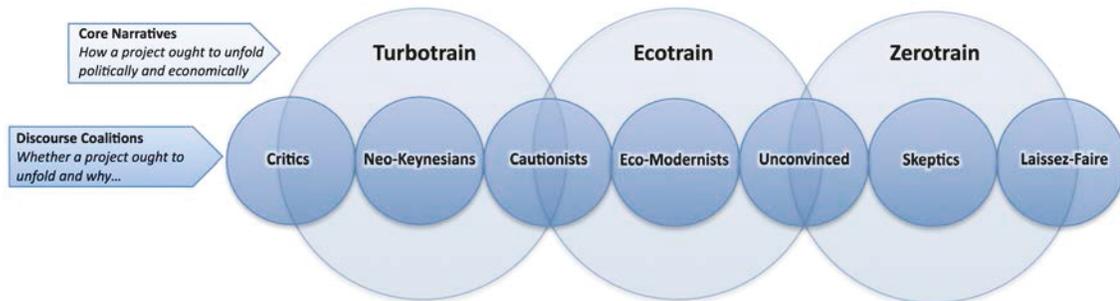
inevitably in almost all cases of new HSR investment (see, for instance, Feigenbaum 2013). Similarly, the socio-ecological impacts of HSR projects are widely contested, with some claiming that “HSR is part of the solution to fight climate change” (Jehanno et al. 2011, p.15), and others arguing that socio-environmental impacts are in fact the principal *downside* to HSR development, since “higher speeds typically mean higher energy consumption and, consequently, higher emissions, either directly from diesel traction or at the power station if the traction is electric” (Nash 1993, p.85). The ensuing pages demonstrate how these divergent perspectives – about HSR’s costs, benefits, impacts and overall feasibility – have been reflected within a Canadian context. Drawing upon a discursive analysis (Davidson & MacKendrick 2004; Blommaert 2005; Flowerdew 2008) of various cultural interpretations about the presumed optimal contexts for HSR within the CEC and the QWC, this chapter lays the groundwork for a further examination (taken up in Part Two of the thesis) of how these different visions of HSR development have manifested and competed for political legitimacy.

EPE Contexts, HSR Outcomes

In taking a closer look at varying assumptions regarding the optimal context for HSR development, it is evident that there are nuances in how different actors believe such projects ought to materialize. For this reason it is helpful to characterize different preferred ecological political economic narratives for HSR in Canada as well as the various ‘discourse coalitions’ which have typically supported them. My discursive analysis has uncovered three such narratives, as well as seven discourse coalitions which map overtop of these political economic visions (see Figure 4A). For the ensuing analysis

I have named these narratives ‘Ecotrain’, ‘Turbotrain’, and ‘Zerotrain’ (their affiliated discourse coalitions are discussed in further detail below).

Figure 4A: EPE Contexts and Discourse Coalitions



Source: Developed by author.

As Figure 4A demonstrates, the boundaries of these EPE contexts overlap to a certain degree, and at times these narratives sound similar at the level of popular discourse. Nevertheless, when one digs further into the expected political economic outcomes and the perceived expectations for development the narratives begin to be disambiguated. In addition to preferred contexts, it is useful to denote the discourse coalitions (Hajer 1993) to which advocates belong to capture the full spectrum of both ‘how’ and ‘why’ an individual or group expects HSR projects to unfold. Finally, it is important to note how the three narratives *tend* to map out horizontally overtop of a ‘traditional’ Canadian left/right political spectrum (see Cochrane 2010), with the Turbotrain narrative situated at the left of centre, the Ecotrain narrative straddling the

political centre (though leaning to the right), and Zerotrain situated on the right.* Let us now examine these three preferred political economic contexts more closely:

Ecotrain

The Ecotrain narrative is named after the EcoTrain Consortium, a corporate group commissioned in 2008 to prepare a commercial feasibility study for HSR in the Québec City-Windsor Corridor.† ‘Ecotrain’ became one of two leading political economic narratives of how HSR *ought* to unravel in Canada after the turn of the millennium.‡ This context encapsulates many of the impulses and beliefs underpinning the global and domestic resurgence of interest in HSR which emerged in concert with the fourth wave of international rail investment (see Chapter Seven). Those who espouse this viewpoint tend to expect HSR to take shape in the form of a privately-operated service, jointly financed by both public and private capital, with the main objective being the stimulation of economic activity through generated traffic and increased interconnectivity between major Canadian cities. In addition to such *economic* benefits, HSR is additionally marketed as a solution for various social and ecological problems relating to heavy

* There are undoubtedly exceptions to this trend, where individuals or groups have adopted a particular discursive narrative regarding HSR development which belies the political persuasions of others who share the same narrative. On the whole, though, there does appear to be a correlation between these narratives and political ideology, which is not altogether surprising given that the contexts are based upon fundamental political questions about the relationship between governments and markets.

† The consortium was led by Dessau and included Deutsche Bahn International, KPMG, MMM Group, and Wilbur Smith Associates. Dessau is one of the world’s largest construction and engineering firms, and is based in Canada. DB International is the German Railway’s international engineering firm. KPMG is one of the world’s largest tax consulting firms, based in the Netherlands; MMM Group is a Canadian construction conglomerate, and Wilbur & Smith was a US based traffic engineering firm which merged in 2011 with CDM to become CDM Smith.

‡ The other leading narrative being the Zerotrain vision of HSR development.

automobile and airplane use. Along these lines, HSR is understood as an element of ecological modernization (EM), playing a role in the ushering-in of a new type of sustainable economy. For Ecotrain proponents, HSR is not merely a project that *could* be entertained by political leaders, but rather one that *should* be developed as part of the nation's long-term sustainability efforts.

In terms of its presumed political economic leanings, the Ecotrain vision of HSR sees room for government stimulus spending as a means of catalyzing what is interpreted as 'efficient' private sector activity. In this sense Ecotrain is most closely affiliated with the 'roll-out' variant of neoliberalism (Peck & Tickell 2007). For instance, one public intellectual who espouses the Ecotrain narrative claims that "the development of high-speed rail in Canada should be our top national *spending* priority" (Nesbitt-Larking 2010 emphasis added); this individual's reasoning for such public spending is that new corporate-operated transport services could play a role in 'greening' economic growth. Ecotrain proponents tend to portray HSR as an exceptional national-scale megaproject which deserves a level of domestic financing that is typically rare in 'lean' economic times. Such levels of spending are only warranted when the business case is understood to be very promising, and the project itself is of national or political significance. Within the Ecotrain rationality, then, the net present value of investments upon the end of the project's lifetime is expected to surpass the amount of capital initially invested. Ecotrain proponents believe this is a plausible outcome, but only insofar as the private sector is adequately spurred to realize its profit-yielding opportunities (thereby creating new markets for HSR travel, creating new employment opportunities, increasing downtown property values, and contributing to the tax bases). As detailed in Part Two of the thesis,

this EPE narrative became more prominent (if not altogether dominant) during the Period of Unanswered Resurgence (1999-2013) and was publicly promoted by numerous high-profile political leaders from across the political spectrum and other societal ‘intellectuals’* (see Figure 4B, below).

Turbotrain

The ‘Turbotrain’ context – named after the publicly owned passenger trains used by Canadian National and subsequently VIA Rail from 1968 to 1982 – envisions a largely ‘neo-Keynesian’ setting for HSR development. The narrative’s economic understanding of HSR spending and its modernist interpretation of HSR’s socio-ecological impacts are similar to those beliefs held by the Ecotrain visionaries, and certainly many Turbotrain proponents have contributed to the resurgence of interest in Canadian HSR projects. Yet the two narratives are largely separated by three key aspects – their core *purpose*, the question of *necessity*, and the relative emphasis on the importance of the *regulatory setting*: While the Ecotrain narrative sees HSR as a *necessary* component of the nation’s long-term sustainability, and sees private sector profitability as the purpose of such development (since it is believed this is the primary causal mechanism responsible for economic growth), the Turbotrain vision sees HSR development more conditionally, as a public transportation tool that *could* achieve social, ecological and economic gains *if* implemented within the right regulatory context. In this vision HSR projects are expected to be regulated as a public service made available by a state-owned enterprise whose

* As noted in Chapter Two, this thesis uses a Gramscian interpretation of ‘intellectuals’ as individuals with the capacity to influence public opinion and mobilize a group of like-minded people.

main objective is to provide efficient and affordable short and medium-haul travel to Canadian citizens in the nation's most densely populated regions (since it is believed state-owned Crown agencies are more accountable to public interests and are not held hostage to the requirement of yielding profits at any cost). For Turbotrain advocates, having a public sector operator is thus an essential ingredient to ensure that HSR serves the broader public interest.

In this vision, it is understood that a priority benefit of HSR infrastructural development is the generation of domestic employment, which, it is presumed, contributes to economic growth. In addition, the stimulation of various related sectors (manufacturing, energy, research, etc.) and domestic firms is sought through policies of domestic procurement (again, because this ensures that any resultant jobs or economic gains 'stay in Canada'). The socio-ecological dimension of the Turbotrain narrative is an important corollary which has helped to justify the associated benefits, yet it is important to note how this narrative's socio-ecological argument – unlike the Ecotrain interpretation – is conditionally tied to the regulation of the transport sector and *intentional* reshaping of mobility relations and markets by transportation planners. In other words, while the Ecotrain narrative has a more market-oriented view of the benefits of HSR ("if you build it, it will take cars off the road"), the Turbotrain narrative asserts that in order for environmental benefits to accrue the state will have to oversee the project and potentially enact regulations to shape the transport market in one way or another, to compel travelers to 'choose' one mode over another.

With the neoliberal turn there has therefore been a decline in the popularity of this narrative compared to the early 1970s, when the viewpoint was largely dominant in

Canada (see Chapter Five). Because the Turbotrain narrative is more relationally tied to broad benefits in the public interest, it is more open to discussion about the different rail technologies (and thus top speeds) of new trains; whereas Ecotrain proponents would like to see the fastest proven commercially-viable technologies implemented, some Turbotrain proponents could potentially be satisfied with *higher* speed rail (incremental improvements to the existing passenger rail services) even though these may not yield the same levels of induced demand.

Zerotrains

The ‘Zerotrains’ context for HSR typically advances the position that it is best for governments not to involve themselves in the development of HSR, in part because it would be too costly and in part because governments should not skew the competitive marketplace in intercity transport.* While Zerotrains advocates often agree with the basic premises of ecological modernization theories,† they ultimately weigh the forecasted costs of development against an assumed set of benefits and conclude that the former outweigh the latter. Yet they often have different reasons (and this is where the discourse coalitions help us to differentiate): Some focus in on the lack of demand or the lack of density required to ensure that a project is profitable, whereas for others it is merely a

* An important note: It is not necessarily the case that anyone who is presently *against* HSR development envisions a Zerotrains context: Rather, these are preferred visions for *how* projects ought to unfold at a political economic level. One finds advocates of the Turbotrain context, for instance, who believe governments should *not* invest in HSR at a given moment, as it is perceived that the *existing* underlying conditions are as yet unfavourable (see Table 4B).

† As Dryzek (2013) notes, a more reactionary socio-ecological narrative is that of ‘Prometheism’. Whereas eco-modernists believe that growth *can be made* green, Prometheans believe growth is an essential requirement for achieving sustainability.

matter of the final cost figure and the principle of using such a relatively large amount of taxpayer dollars. Yet in both cases the underlying subjectivity is that governments *ought not* to be spending money on *unprofitable* commercial enterprises. In this sense the Zerotrain narrative aligns most closely with ‘roll-back’ neoliberal understandings of fiscal restraint, austerity, and ‘cold bath’* monetarism (Peck & Tickell 2007). For many inclined to this narrative, it is thus believed that more privately-owned and operated modes of intercity transport (in particular, automobiles and airplanes) *should* and *will* continue to dominate the market (with the costs presumably offloaded to individuals and private firms) and further that these latter modes should increasingly be removed from *direct* state financing.† This EPE context became dominant during the Period of Impasse in Canadian HSR development (1983-1998) – an era during which state spending as a percentage of GDP steadily declined (see Chapter Six). The Zerotrain perspective further remained strong (if not dominant) during the Period of Unanswered Resurgence, which worked at blocking political movement towards HSR development within both the QWC and CEC despite the growing prominence of the Ecotrain narrative at the same time. As noted above there are implicit claims and assumptions which underlie each of these public narratives. Tables 4A through 4G further differentiate the narratives with the aid of key characteristic quotations.

* The early monetarist policies of the US federal reserve in the late 1970s, when Paul Volcker was Chairman, came to be colloquially known as “Volcker’s cold bath” amongst senior officials at the Bank of Canada (Drainville 1995, p.9).

† The irony in this point of view, of course, is that the state significantly finances both the air and automobile modes through major subsidies and grants. Between the 2002/03 and 2011/12 federal budgets, some \$553 million was spent on the air mode, mostly through airport assistance. Meanwhile, during the same period the federal government spent \$7.3 trillion on highways (Transport Canada 2012b, p.A63).

Table 4A: Main Public Narrative

Turbotrain	Ecotrain	Zerotrain
<p>Public investment in rail modernization could spur economic activity and job growth, and if regulated properly can help reduce highway congestion and fossil fuel use in key corridors.</p> <p><i>Key Quote:</i> “Investing almost \$8 billion per year in transit and intercity rail... would mark a major step forward to a more sustainable economy, and would be a huge creator of jobs” (Jackson 2009, p.7).</p>	<p>HSR development through a public-private partnership is a ‘no brainer’: HSR is fast, safe, environmentally friendly, and profitable – the rest of the industrialized world knows this already. HSR is a key component of a future sustainable Canada.</p> <p><i>Key Quote:</i> “[HSR] looks to the future, helps us be innovators in a sector that is expanding worldwide, addresses climate change, [it is] responsible development” (Berton in Berton & Rutherford 2009).</p>	<p>HSR is going to drain public coffers; it is unprofitable just about everywhere in the world; there is clearly not enough demand in Canada’s car-dependent, low-density corridors to justify such a major use of taxpayer dollars.</p> <p><i>Key Quote:</i> “We don’t even have a plan for this and a lot of Canadians will think of it as a high-priced toy” (Rutherford in Berton & Rutherford 2009).</p>

Table 4B: Should HSR projects be private or public?

Turbotrain	Ecotrain	Zerotrain
<p>HSR projects should be entirely public.</p> <p><i>Key Quote:</i> “We’d like to see [HSR] developed using a more traditional financing model in which the government... maintains control over the project and keeps the operation and maintenance within the public sector once it’s finished” (Alberta Federation of Labour 2013).</p>	<p>Governments may have to be involved in some capacity; but HSR would be better if operated by the private sector.</p> <p><i>Key Quote:</i> “The project must be an exemplar of multi-level governance collaboration and will inevitably incorporate a range of private-sector partners” (Nesbitt-Larking 2010).</p>	<p>If a project goes forward at all then it should be undertaken entirely by the private sector.</p> <p><i>Key Quote:</i> “[HSR] would be a lovely option – if it could be done without dragging taxpayers into it and thus into a financial morass” (Mark Milke, quoted in De Souza 2009a).</p>

Table 4C: Should HSR fall under VIA Rail’s mandate as a Crown corporation?

Turbotrain	Ecotrain	Zerotrain
<p>Yes, HSR lines should be operated by either a federal or provincial Crown corporation.</p> <p><i>Key Quote:</i> “We’d be thrilled by the prospect [of a Crown corporation operating HSR]... in fact Alberta used to have Crown corporations that acted as the catalyst for the development of key areas of the economy” (Alberta Federation of Labour 2013).</p>	<p>Given its lack of expertise with HSR, VIA Rail is likely not in the best position to operate new lines (it is best off sticking to conventional rail).</p> <p><i>Key Quote:</i> “VIA has been plagued from the get-go with obsolete technology, decreasing ridership, and wasteful public subsidy” (Valli 2010).</p>	<p>Absolutely not! No subsidized Crown agency should be involved. Further, Crowns are inefficient.</p> <p><i>Key Quote:</i> “The federal government has provided \$4 billion in operating and capital subsidies to [VIA since 1996]. It is thus fanciful to expect high-speed rail could be built and operated without large taxpayer subsidies, be it in Southern Ontario or in Central Alberta” (Milke 2012).</p>

Table 4D: Is there sufficient demand for HSR today?

Turbotrain	Ecotrain	Zerotrain
<p>If governments closely ‘manage’ the intercity transport market there will be sufficient demand for HSR.</p> <p><i>Key Quote:</i> “Wherever I go this gets a lot of attention and a lot of people love it... There’s tons of support, but the reality is right now we don’t have a plan” (New Democratic Party of Canada 2013).</p>	<p>Yes, there is presently sufficient demand for HSR to be profitable.</p> <p><i>Key Quote:</i> “Sufficient demand exists <i>today</i> to support a high speed rail service offering about two hours or less travel time between Calgary and Edmonton” (Van Horne Institute 2004, p.vi emphasis in original).</p>	<p>There is neither sufficient demand nor requirement for HSR in Canada.</p> <p><i>Key Quote:</i> “Let’s face it, if these things were commercially viable, it would have happened [in North America] a long time ago” (Mario Iacobacci, quoted in De Souza 2009a).</p>

Table 4E: Are there social or ecological benefits to be gained from HSR?

Turbotrain	Ecotrain	Zerotrain
<p>There is potential for social and ecological benefits, but for these to accrue new HSR lines must be regulated and carefully planned to account for externalities.</p> <p><i>Key Quote:</i> “Unfortunately, I still feel like an extra in Dr. Zhivago whenever I get on that train from Montreal to Ottawa... it’s going cha-chunk, cha-chunk, cha-chunk. I was in France last year and it was going whoosh, but <i>they’ve been planning that for 40 years</i>” (Thomas Mulcair, as quoted in McKnight & Crawford 2013).</p>	<p>Yes, there would be considerable social and ecological benefits from introducing HSR.</p> <p><i>Key Quote:</i> “High-speed rail is an essential component of environmental sustainability. The benefits are not merely in instant and dramatic reductions in emissions, but also in the cessation of existing catastrophic infrastructure development and green field sprawl” (Nesbitt-Larking 2010).</p>	<p>HSR may produce some social or ecological benefits, but these are largely overstated – there are less costly ways to achieve these benefits.</p> <p><i>Key Quote:</i> “HSR creates more pollution than it prevents because building a HSR line is very energy-intensive... there are many more cost-effective ways to improve the environment than building HSR” (Feigenbaum 2013).</p>

Table 4F: Are there social or ecological costs from introducing HSR?

Turbotrain	Ecotrain	Zerotrain
<p>There is a likelihood for negative externalities if HSR is introduced in an unregulated environment.</p> <p><i>Key Quote:</i> “Of course you have to look at how the [HST’s] electricity is generated from fossil fuels oil, or even coal. That’s not as clean as if you’re dealing with... mostly hydroelectric power. So it’s not a simple matter” (Transport Action Canada 2013).</p>	<p>Any social or ecological costs are outweighed by the major benefits brought by HSR. Furthermore, they will be <i>internalized</i> within the broader costs of doing business.</p> <p><i>Key Quote:</i> “If there are any ecological costs we’re going to pay them... The costs are going to be borne by the private sector” (Alberta High Speed Rail 2013).</p>	<p>There will be long term social costs incurred by taxpayers when HSR is a business flop.</p> <p><i>Key Quote:</i> “The concern is that the public does not become saddled with the cost, or the lion’s share of the cost, or any cost of building what essentially would be a private venture” (Frontier Centre for Public Policy 2013).</p>

Table 4G: Should HSR investment stay in Canada?

Turbotrain	Ecotrain	Zerotrain
<p>Any investments used for HSR should remain in Canada as much as possible. There should be a domestic procurement policy.</p> <p><i>Key Quote:</i> “The positive job impacts from higher levels of investment [in domestic transportation infrastructure] could be increased by Made-in-Canada procurement policies” (Jackson 2009).</p>	<p>There are Canadian firms that have the technological knowhow, but a competitive bidding process would have to be open to all to ensure the best proposal wins.</p> <p><i>Key Quote:</i> “You’ll be able to do all the construction within Canada... but of course we will get some bids from other [companies]. It’s going to be a commercial decision based on who can meet our needs and who can provide the best opportunity for us to provide a successful railway” (Alberta High Speed Rail 2013).</p>	<p>If it makes better business sense to bring in foreign expertise, materials or labour, then no private company should be held up by regulations telling them how to run their business.</p> <p><i>Key Quote:</i> “We’re a government – we’re not running the business; We just tax it” (Alberta Minister of Transportation 2013).</p>

Institutional Actors and Political Economic Preferences

Each EPE context has its respective actors and ‘intellectuals’ who support and push for that narrative – a storyline for how they believe HSR development should unfold. In interpreting public relations (PR) documents, institutional reports, position papers, statements within the media, and content from in-depth interviews, it has been possible to infer which political economic context was typically preferred by a given actor.* The

* The ensuing analysis attempts to capture the preferred ecological political economic contexts of various actors towards the *end* of the Period of Unanswered Resurgence (1999 – 2013). As a caveat, opinions do change, institutions evolve, and as such these tables must be understood as a temporary snapshot of public opinion. Data sources are included within the tables for each individual entry in parenthetical references.

ensuing analysis explains how different categories of actors displayed different patterns in their political economic allegiances. In turn, such allegiances influenced a given actors' perspective on HSR development. Characterizing the different categories of proponents for each viewpoint helps to identify the social spaces in which each HSR narrative has been persuasive (and thus helps characterize the great 'battle of ideas' surrounding HSR development in Canada). For instance, it is instructive that the federal government and the Alberta provincial governments – both of which have had *de facto* veto power over HSR investment decisions in the QWC and CEC respectively – were primarily aligned with the Zerotrain narrative towards the end of the Period of Unanswered Resurgence, whereas transport policy organizations and railway industry firms were more inclined to side with the Ecotrain narrative at that time. This type of distributional analysis of narrative allegiances thus helps to explain how different narratives have competed for political legitimacy with backing by various socio-institutional actors (some of which have more power and clout than others).

Government Agencies, Associations, and Municipalities

As Table 4H demonstrates, the scale of political jurisdiction appears to play an important role in shaping the preferred political economic context for HSR. Municipal governments, accustomed to the challenges of funding and planning intra-urban transit, are typically more open to the idea of statist interventions aiming to carefully plan out and fund (with taxpayer dollars) intercity transport projects that would link into municipal areas – hence tending to be more inclined toward the TurboTRAIN narrative.

Table 4H: Government Agencies, Associations, or Municipalities

Turbotrain	Ecotrain	Zerotrain
<ul style="list-style-type: none"> • Calgary Regional Partnership (Shepherd 2014) • City of Edmonton (Maimann 2014) • City of Calgary (Simons 2014) • Federation of Canadian Municipalities (Thompson & Rubinstein 2014) 	<ul style="list-style-type: none"> • Ontario Ministry of Transportation (CBC News 2014d) • Transports Quebec (White 2009) 	<ul style="list-style-type: none"> • Transport Canada (2013) • Alberta Transportation (Alberta Minister of Transportation 2013)

Provincial governments, meanwhile, have tended to take on the advocating role for intercity rail development and as such provincial spokespersons (including Premiers) have expressed more openness to the idea of private sector development of HSR, perhaps in an effort to attract investment to their respective provinces, while at the same time avoiding taking genuine steps towards actual development (which would require large spending announcements). Notably, the Alberta government has been more wary of making pronouncements about large scale public spending than Ontario and Québec, in part due to its lower net state revenues.* As Table 4I highlights, the Alberta government has typically maintained a positive revenue-expenditure balance (whereas the latter provinces have typically spent more than their revenue intake) in the latter years of the Period of Unanswered Resurgence.

* Despite this, Alberta has a higher revenue intake *per capita* than Ontario and Québec.

Table 4I: Provincial Government Revenues and Expenditures, 2009 Snapshot

	Alberta (2009 pop. 3,679,100)	Ontario (2009 pop. 12,997,700)	Québec (2009 pop. 7,843,500)
Revenue	\$51,388,000,000	\$141,577,000,000	\$101,392,000,000
Expenditure	\$49,201,000,000	\$147,581,000,000	\$107,491,000,000
Balance	\$2,187,000,000	(\$6,004,000,000)	(\$6,099,000,000)
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Revenue per cap.	\$13,967	\$10,892	\$12,927
Expenditure per cap.	\$13,373	\$11,354	\$13,704

Data Sources: Statistics Canada (2009; 2013b).

Meanwhile, the federal government, having subsidized public rail for decades (despite having a national transport policy at odds with the very practice), has tended to espouse a Zerotrain narrative of HSR development in seeking to remove itself from the business of unprofitable passenger rail.

Commercial Transportation Firms and Associations

The distributional trend of commercial transport firms in terms of HSR preferences (Table 4J) is perhaps unsurprising: Commercial firms associated with competing modes – airlines and commercial bus coach lines – tend to oppose the idea of public financing for HSR since it is presumed that a new mode will eat into profits. Meanwhile, most companies with a vested interest in HSR itself were clearly compelled by the Ecotrain narrative – unsurprising since they have the most to gain from such investments. Finally, VIA Rail, a Crown agency entirely dependent on government financing, foresees a political economic context for HSR in which it continues *itself* to serve as the nation’s primary passenger rail operator.

Table 4J: Commercial Transportation Firms and Associations

Turbotrain	Ecotrain	ZeroTRAIN
<ul style="list-style-type: none"> • VIA Rail (2013) 	<ul style="list-style-type: none"> • Alberta High-Speed Rail (2013) • Bombardier (2013) • SNC Lavalin (2014) • US-Japan High-Speed Rail (Rainey 2014) • Railway Association of Canada (De Souza 2009c) • Siemens Canada (Fekete 2009) 	<ul style="list-style-type: none"> • National Airlines Council (Vanstone 2014) • Canadian Bus Association (Bus Industry Transport Economist 2013) • Air Canada (Vanstone 2014) • Calgary Airport Authority (Atkinson 2014) • Edmonton International Airport (Ruth 2014)

Transport and Public Policy Organizations, Think Tanks, and Interest Groups

It is intriguing to note the distribution of transport and social policy-oriented institutions and think tanks along the narrative spectrum (Table 4K). Organizations which focus specifically on transportation issues tended to be more open to the idea that a future HSR project would have to involve government financing and regulation to at least a certain degree. Meanwhile, public policy groups (with a broader focus on ‘the economy’ as a whole) tended to side with the ZeroTRAIN narrative; in particular, a number of market-oriented and tax-averse think tanks in Canada have stated an anti-HSR position due to the expected capital costs. One spokesperson for the Canadian Taxpayers’ Federation characterizes this viewpoint:

Simply put, this [HSR] proposal makes no economic sense. Population density ensures that this high-speed rail corridor will never make enough money to justify the costs. Not even the TGV is economically sustainable. Only Japan's bullet trains which serve a corridor of 60 million people (as opposed to 8 million in the Ontario-Quebec jaunt) recoup their operational costs with start-up costs being written off (Robinson 2003).

Unsurprisingly, rail-oriented interest groups such as *Alberta Bullet Train* or *High-Speed Rail Canada* tended to side with the Ecotrain narrative (in fact serving as leading

intellectual proponents of this narrative), while left-leaning social policy groups such as the Council of Canadians or the Green Economy Network tended to side with the Turbotrain vision, calling for much greater state involvement in financing and regulating the transport sector for the sake of creating green jobs for Canadians.

Table 4K: Transport and Public Policy Organizations

Turbotrain	Ecotrain	Zerotrain
<i>Transport Policy Organizations and Interest Groups</i>		
<ul style="list-style-type: none"> • Victoria Transport Policy Institute (2013) • Transport Action Canada (2013) 	<ul style="list-style-type: none"> • Alberta Bullet Train (2007) • High Speed Rail Canada (Hadekel 2011) • Van Horne Institute (2004) • Martin Prosperity Institute (Stolarick et al. 2010) 	
<i>Other Public Policy Organizations & Think Tanks</i>		
<ul style="list-style-type: none"> • Green Economy Network (2012) • Council of Canadians (Harden-Donahue & Peart 2009) 	<ul style="list-style-type: none"> • Canada West Foundation (Vineberg 2008) 	<ul style="list-style-type: none"> • Canadian Taxpayers' Federation (Robinson 2003) • Conference Board of Canada (2009c) • Fraser Institute (Milke 2012) • Frontier Centre for Public Policy (2013) • P.M Bunting & Assoc. (Bunting 1998)

Labour Unions and Environmental Organizations

Of the Canadian unions with a clearly stated position on high-speed rail development, the tendency has been to advocate a Turbotrain narrative of HSR development. Meanwhile, for environmental organizations the tendency has largely been to straddle the line between Turbotrain and Ecotrain narratives, while leaning ever-so-slightly towards the former narrative (see Table 4L; or Figure 4B below). For unions, this orientation is a result of the view that publicly funded and operated HSR lines, in combination with

domestic procurement policies, results in the creation of well-paid, relatively-secure public sector jobs that stay within Canadian borders (Jackson 2009; Unifor 2013). For environmental organizations, the Turbotrain narrative is compelling because it offers the proposed regulatory measures and government planning dimensions associated with a contemporary critique of neoliberal environmental governance – a critique which such organizations have historically helped to shape (Stewart 2001). At the same time, the EcoTRAIN narrative has offered a compelling discourse about ecological modernization around which support for ‘green infrastructure’ has coalesced. Hence support for HSR has been largely conditional for environmental groups; such organizations only support a public investment in HSR if it is part of a broader regulatory effort to reduce the polity’s fossil fuel consumption. For instance, Greenpeace’s head campaigner in Alberta, Mike Hudema, has stated the group would support HSR investment in the CEC “*if* it reduces Alberta’s greenhouse gas emissions” through its implementation in conjunction with a broader plan to shift the province’s energy production towards renewable sources (Lamphier 2009; Hudema 2014). During the Period of Unanswered Resurgence both labour organizations and environmental groups have tended to view HSR as a public policy tool to address climate change while simultaneously creating new types of ‘green’ domestic employment. This has been exemplified in the work of the Green Economy Network, a coalition of Canadian environmental and labour groups advocating increased public financing for public transportation infrastructure with the dual purposes of creating green jobs and reducing fossil fuel consumption (see Green Economy Network 2012).

Table 4L: Labour Unions and Environmental Organizations

Turbotrain	Ecotrain	Zerotrain
<i>Labour Organizations</i>		
<ul style="list-style-type: none"> • Alberta Federation of Labour (2013) • Canadian Labour Congress (Jackson 2009) • Teamsters Canada (White 2009) • Unifor (2013) 		
<i>Environmental Organizations</i>		
<ul style="list-style-type: none"> • Alberta Wilderness Association (Olson 2014) • Greenpeace (Hudema 2014) • Sierra Club, Prairie Chapter (Thompson 2009) • Pembina Institute (Burda et al. 2012) • David Suzuki Foundation (Bataille et al. 2009) 		

Political Parties

Of the political parties which have either stated a policy or platform position on HSR, the tendency has been for left-leaning parties to associate with the Turbotrain narrative, centrist parties with the Ecotrain narrative, and right-leaning parties with the Zerotrain narrative (see Table 4M). Nevertheless, political parties evolve their positions over time, particularly as new leaders are selected. A further complication is that politicians often make public pronouncements which at times do not appear to match the party’s voting record or policy platforms. For this reason it is also helpful to examine the statements of political leaders of each party (see Figure 4B below).

Table 4M: Political Parties

Turbotrain	Ecotrain	Zerotrain
<ul style="list-style-type: none"> • New Democratic Party of Canada (2013) • Alberta New Democratic Party (Audette 2012) • Bloc Québécois (CBC News 2008b) 	<ul style="list-style-type: none"> • Federal Green Party (Green & Wu 2011) • Federal Liberal Party (Brownell 2012) • Parti Québécois (Marois 2013) • Ontario Liberal Party (CBC News 2014d) • Alberta Wild Rose Party (Audette 2012) 	<ul style="list-style-type: none"> • Conservative Party of Canada (Transport Canada 2013) • Quebec Liberal Party (White 2009; Séguin 2014) • Ontario Progressive Conservatives (Bellemare & Grant 2014) • Alberta Progressive Conservatives (Alberta Minister of Transportation 2013)

Of the political parties holding power by 2013 in Ontario, Québec, Alberta and the Canadian federal government, the preferred EPE contexts were largely reflected in government policy overall, since in most jurisdictions the parties held a majority government.* The federal Conservatives led by Stephen Harper (who became Prime Minister in 2006) and the Alberta Progressive Conservatives led by Alison Redford (who was Premier from 2011 to 2014)† both adhered to fiscal restraint policies associated with the Zerotrain narrative. The Ontario Liberals led by Kathleen Wynne (who became Premier in 2013), by contrast, embraced a more open stance towards the idea of government spending as a tool to stimulate private sector opportunities for efficient HSR services specifically. In Québec, the Parti Québécois enjoyed a short 19 months in power (albeit in a minority government), and thus the policies of the preceding Québec Liberals

* Québec is the main exception, with the Parti Québécois (PQ) leading a *minority* government for 19 months between 2012 and 2014. Majority Liberal governments preceded and followed the PQ government in the province.

† Redford stepped down from the Premiership in March, 2014. At the time of writing (fall 2014) the party was led by Premier Jim Prentice.

led by Jean Charest (who was Premier from 2003 to 2012) continued to define the provincial stance on HSR; Charest had originally supported HSR investment from an Ecotrain perspective, but the party adopted a more austere perspective on public spending after the 2008 financial crisis. Finally, with the exception of right wing fiscal conservative parties, many opposition parties align with either the Turbotrain or Ecotrain narratives.

HSR Discourse Coalitions

As noted above the broader EPE narratives of HSR development can be broken down further into various categories of supporters – what Hajer (1993) calls ‘discourse coalitions’ – “the ensemble of a set of story lines, the actors that utter these story lines, and the practices that conform to these story lines, all organized around a discourse” (47). The actors within each discourse coalition include government agencies, commercial transportation firms or associations, political parties, public policy organizations and think tanks, labour organizations and other interest groups, as well as individual intellectuals. As Dryzek has written, different discourses will see the underlying context from a different point of view, and as such emphasize different priorities, with “each discourse rest[ing] on assumptions, judgments, and contentions that provide the basic terms for analysis, debates, agreements, and disagreements” (Dryzek 2013, p.9-10). In this case I have differentiated discourse coalitions along their predominant justifications for *how* and *why* they see the optimal outcome for HSR in Canada:

Critics

The Critics, in this case study, are an amalgam of actors who tend to see HSR as an infrastructural project with wide-reaching *impacts*. The Critics tend to oppose HSR development – at least as it is envisioned by the popular grand-narrative found within today’s contemporary HSR resurgence. They approach the situation holistically in seeing HSR as one potential mode within a broader transport system, and one commercial enterprise within an entire economy. They tend to worry about the potential for costs to be created wherever benefits are as well – yet they interpret such costs broadly and beyond financial terms.* The critics tend to turn to the issue of ‘need’, and question whether the growth in capacity brought on by HSR is either necessary or warranted. As Figure 4B indicates, this coalition is a rather small one in Canada, with few outspoken public intellectuals leading the camp – one of whom is Alberta writer David Climenhaga, who claims two of the main reasons why HSR in the CEC would fail are: “1) providing power to run the trains would be both a financial and environmental burden; 2) the line itself would create grave environmental problems” (2014).† Members of this coalition may find inspiration in the writings of two high-profile British writers who have been outspoken in their critique of HSR’s broader environmental impacts in that country – journalist George Monbiot and scholar John Whitelegg. While neither has written specifically about *Canadian* HSR development, their popular opposition to the proposed ‘HS2’ project in Britain has been featured in global news sites such as *The Guardian*

* Critical EPE scholars would fit well within this discourse coalition.

† Climenhaga’s third main concern has to do with the costs of the project given what he sees as its likely failure.

(Monbiot 2010; Whitelegg 2009), providing fodder for critics in other nations. For instance, the words of Whitelegg are characteristic of the viewpoint that HSR has an array of environmental costs when considered holistically, a critique that could easily be applied to other industrialized nations:

“HSR does not reduce the fuel consumption of domestic aviation or reduce annual carbon emissions from aircraft. And it produces twice as much CO₂ per passenger kilometre as a non-high speed train. If we are serious about reducing our carbon emissions by 80% by 2050, we should not move towards higher speed, more carbon intensive forms of transport and a policy of increasing the mass of travel” (Whitelegg 2009).*

For these reasons the Critics tend to oppose the idea of HSR development. However, *if* governments do decide to invest in HSR lines, members of this coalition would typically want it to take place along the lines of the Turbotrain context; they would want to either see governmental regulation implemented to manage transportation demand *or* they may see job creation and economic growth potentially as justifiable gains despite their associated costs (so long as the latter are acknowledged and mediated through regulatory efforts). For instance, Todd Litman of Victoria Transport Policy Institute suggests a role for regulation or more responsive market mechanisms to ensure that the true costs of transportation are captured in ticket fares or parking and gasoline use, etc. (VTPI 2013).[†] The Critics’ focus on broad impacts as opposed to raw financial

* Whitelegg notes two exceptions – the Paris-Lyon and Madrid-Seville lines – but follows this caveat by noting that “this ability to trash a single air route should not be interpreted as something that can dent the growth of air travel”.

[†] Litman uses the word ‘skeptical’ (not ‘critical’) in reference to claims that HSR necessarily provides environmental benefits. My placement of Litman in ‘the Critics’ coalition is based on his nuanced analysis of the way the context ultimately shapes the socio-ecological impacts of HSR.

capital costs is important as this nuance is a point of differentiation between this group and those within the Unconvinced or Skeptics coalitions.

Neo-Keynesians

The Neo-Keynesians form another small discourse coalition which views HSR development primarily through the lenses of potential job creation. The scale of investment typically associated with HSR is interpreted by this group as an inevitable boon to domestic employment. The particular technological choice (and as such the speed capacity) of HSR technology is not as important as ensuring that investments stay within the country to maximize the value in terms of net economic spinoffs. Naturally, this discourse coalition fits well with the Turbotrain vision, since their view is that domestic procurement policies and public operators translate into secure (typically unionized), well-paid jobs. Because of the popular association of HSR with sustainable transport, some members of this coalition have expanded their rhetoric on the type of employment that HSR could generate, speaking of the creation of ‘green jobs’. For instance, as one proponent from the Canadian Labour Congress explains, investments of this sort “would make a significant contribution to reduction of Canada’s greenhouse gas emissions, and would also create literally tens of thousands of new jobs” (Jackson 2009).

Cautionists

The Cautionists are typically compelled by the social and ecological promise and potential of HSR, yet feel for one reason or another that the present situation is not ‘ready’ for such a scale of investment. This is a broad coalition which is somewhat split in terms of its political economic underpinnings (with some proponents swayed by the

Turbotrain plan for measured, regulated, domestic public-sector investment, and others compelled by a more neoliberal Ecotrain model of seeking public-private partnerships). Despite different visions for how HSR ought to unfold, the group coalesces around the way it answers the question of whether a project ought to unfold given the present context: This context is not quite right, they claim, because there are *other pressing priorities that need to be dealt with first* given the likelihood of limited public funding available. Usually this means improving existing municipal transit systems, but sometimes it can mean enacting the regulatory measures required to make sure investments yield the types of changes expected. As an example, VIA Rail situated itself within this coalition in 2011 in the wake of government cutbacks. VIA sees itself as the appropriate operator of any future high-speed rail service in Canada – but it also identifies its foremost priority as improving its existing operations with the limited funding it currently receives. Thus, one spokesperson for VIA noted “our position is that high-speed rail is not an alternative to our conventional service, but just one element to our overall passenger strategy...,” adding that “any plan to move forward with high-speed rail would be a government prerogative. Our focus is to improve our current rail services in Canada” (quoted in Battagello 2011). Thus, despite advocating HSR development, the implicit statement is that HSR will have to wait *for now*, until a government more open to spending and infrastructural development arrives ready to fund VIA to the degree required for genuine HSR development. As noted in Figure 4B, a number of municipal representatives from Edmonton and Calgary are also situated within the Cautionist camp, having expressed the position that although they support HSR

investment in principle, a more pressing priority is to improve the municipal transit systems within the two cities (Maimann 2014; Simons 2014).

Eco-Modernists

A broad group of actors forms the Eco-Modernist discourse coalition.* The group draws upon the Ecotrain EPE context to advocate the immediate development of very high-speed trains. It is common to hear those in this coalition talk about HSR as a project that is *needed*; the *only* solution to a compendium of transportation, environmental and economic problems. For instance, Richard Florida, writing about the North American recession, suggests that high-speed rail is “the *only* infrastructure fix that promises to speed the velocity of moving people, goods, and ideas while also expanding and intensifying our development patterns” (2010 emphasis added). Or note the words of Paul Langan, president of High-Speed Rail Canada: “We *need* modern passenger rail like the rest of the world has” (quoted in Visser 2010). As Ecotrain proponents, the Eco-Modernists envision some level of partnership between the public and private sectors. Private sector involvement is important because an infusion of external capital can make the project more reasonable for governments to consider. As former Liberal transport critic Joe Volpe put it: “You can amortize it over a 50-year period, because this is going be bringing in cash from the moment that you turn the key” (as quoted in De Souza 2009b). The Eco-Modernists constitute one of largest discourse coalitions within the

* While the Eco-Modernists, as a discourse coalition, embrace a theory of Ecological Modernization (as defined in Chapter Two), this is not to suggest that members of other discourse coalitions do not *also* adhere to the EM theory.

Period of Unanswered Resurgence, based on the intellectuals classified in this study (see Figure 4B).

The Unconvinced

The Unconvinced discourse coalition is compelled by the vision of modern high-speed trains, but is primarily concerned about the capital costs. Like the ‘Cautionists’, this coalition is itself divided by different political economic views held by its proponents. High profile decision-makers in the Alberta government serve as a good example: Former Premier Alison Redford and transport minister Ric McIver both expressed enthusiastic interest in the idea of HSR within the CEC, but were not prepared to dedicate any public funding towards the initiative. When I asked the Alberta Minister of Transportation how much money the government was prepared to spend on an HSR project, the answer was none at all: “The way I see it now, some private business or enterprise would have to build it. I today don’t anticipate that the government would build this or ask taxpayers to pay for it” (Alberta Minister of Transportation 2013). On the surface this narrative sounds similar to the Cautionist narrative in its discussion of *whether* funds should currently be put towards HSR development, yet in digging further it is possible to differentiate between the two groups because of their underlying rationale for hesitation: The Unconvinced are primarily anxious about the allocation of government funds for projects which could quite easily be fulfilled by the private sector (and in their view, *better* fulfilled by the private sector); the Cautionists see no problem with using government funds for public projects, but rather would prefer such funding to be used for more pressing needs at the moment given the reality of limited government finances.

The Skeptics

The Skeptics would rather not have high-speed rail developed because they believe the costs will inevitably outweigh the benefits. They tend to point to the lack of demand required to make an HSR enterprise profitable. In this sense the desired outcome of their narrative is similar to the Critics, but again their reasoning and political economic preferences differentiate them. The focus of the Skeptics is the business case potential (or the lack thereof), as opposed to the widespread socio-ecological impacts of development. For instance, one transport economist I spoke with who espoused the Skeptic viewpoint argued that the time savings of HSR relative to existing modes is so minimal that the enormous expense of taxpayer financing is simply unjustifiable: “It depends on the speed obviously, but the point is, [HSR] is not much of a benefit relative to the infrastructure which exists right now, which in this case would be air” (Bus Industry Transport Economist 2013). Because of its presuppositions regarding the role of public spending and government intervention within markets, this discourse coalition is most clearly situated within the Zerotrains narrative.

Laissez-Faire Coalition

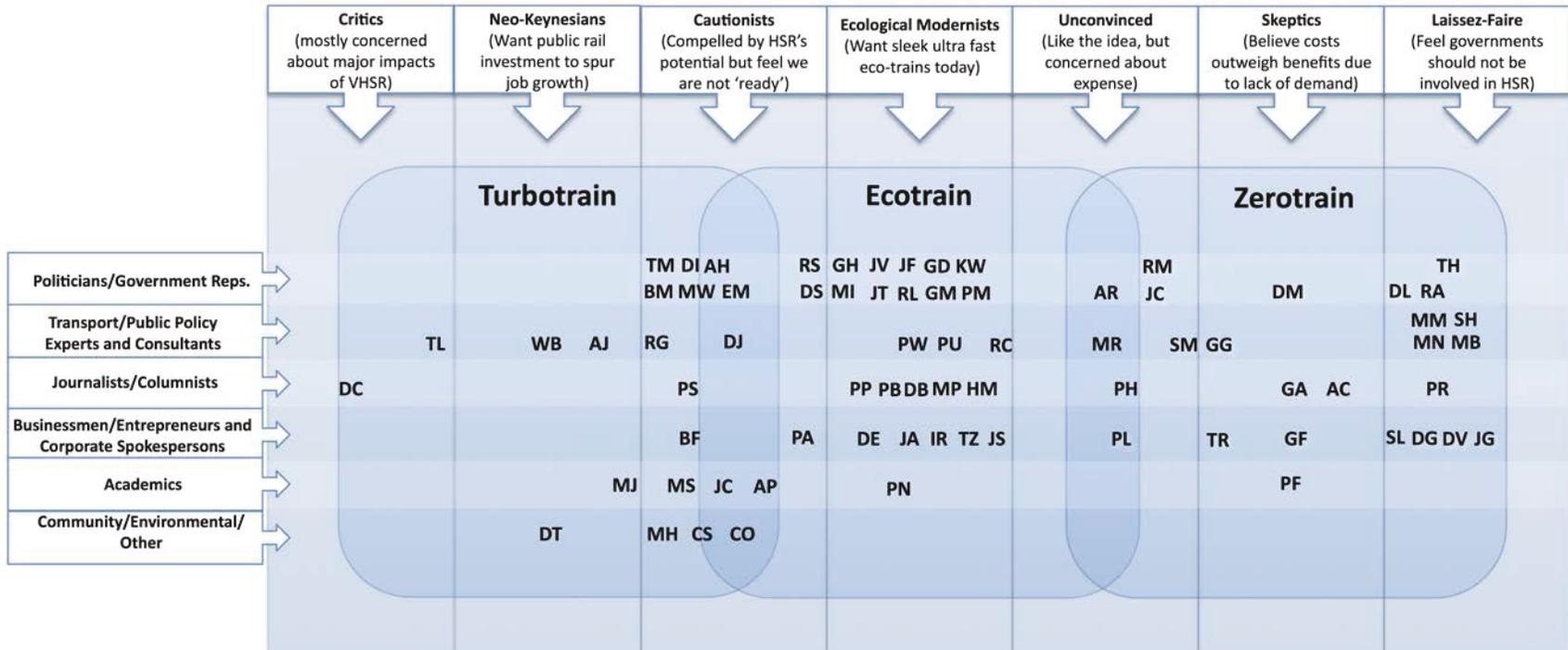
Finally, proponents of the Laissez-Faire coalition feel that the final decision on whether HSR should be introduced is entirely dependent on whether the government plans to be involved. Whether or not they are compelled by HSR’s potential is not the point; rather, if government will be subsidizing this project, or a Crown agency will serve as the operator, then those within the Laissez-Faire coalition would prefer it not take place. This differentiates them from the Skeptics, as the latter typically do not believe the benefits of HSR could ever outweigh the costs, regardless of government involvement or not. Hence,

theoretically one could encounter a member of the Laissez-Faire coalition who thoroughly believes in the idea of completely private HSR development (though in a Canadian context such views do not appear to be commonplace).

The Laissez-Faire coalition is in favour of uninhibited competition within the transport market. For this reason many proponents have come out against HSR because of the likelihood for government involvement and resultant market distortions. As a spokesperson for the Canadian Taxpayers Federation points out, “we don't subsidize WestJet. We don't subsidize them to fly between Calgary and Edmonton” (quoted in Fekete 2007). Airline spokespersons made a similar argument: *Air Canada* has clarified that it is not opposed to an HSR line in the CEC *per se*, but only approves of the idea *if* “the competition on the route will be fair and that there will be *no government subsidy for the construction or operation* of this high-speed rail link” (Vanstone 2014, emphasis added). This stipulation extends to all levels of government and even costs associated with procuring a right-of-way (expropriation, etc.).

Just as we can classify the ecological political economic context expected by different actors, it is possible to get a better picture of the membership of each discourse coalition. Below I have categorized a list of over 75 ‘public intellectuals’ (including transport experts, political leaders, official representatives of recognized institutional bodies, or public figures with the potential to shape public opinion) *who have openly stated their opinion of HSR* in Canada. Their respective viewpoints – captured in news articles, public relations materials and parliamentary hearings, among other sources in the public record) have been interpreted, analyzed and depicted visually (see Figure 4B).

Figure 4B: HSR Discourse Coalitions and Intellectuals*



Source: Developed by author.

* An important caveat to note is that interpretations change over time and subjective beliefs are not always accurately captured by news articles or in Public Relations materials. The intention here is not to 'expose' individual or institutional positions on HSR but rather to map out the 'big picture' in terms of leading narratives regarding HSR development in Canada.

Index for Figure 4B: Public Intellectuals with a Stated Position on HSR*

Politicians or Governmental Representatives

- AH** – Andrea Horvath, Ontario NDP Leader (Taylor 2014)
AR – Alison Redford, Former Premier of Alberta (Komarnicki & Gerein 2011)
BA – Brian Mason, Alberta NDP Leader (Audette 2012)
BM – Brian Masse, NDP Member of Parliament (Masse 2011)
DI – Don Iveson, Mayor of Edmonton (Simons 2014)
DL – Denis Lebel, Former Federal Minister of Transport, (Zeliger & Greenberg 2011)
DM – Dalton McGuinty, Former Premier of Ontario (Zeliger & Greenberg 2011)
DS – Danielle Smith, Leader of Alberta Wild Rose Party (Audette 2012)
EM – Elizabeth May, Leader of the Federal Green Party (Green & Wu 2011)
GD – Gilles Duceppe, Former Leader of the Bloc Québécois (CBC News 2008a)
GH – Grant Hopcroft, Rep. City of London (SCTIC, 2009)
GM – Glen Murray, Ontario Minister of Transportation (CBC News 2014d)
JC – Jean Charest, Former Premier of Québec (White 2009)
JF – Joe Fontana, Mayor of London (Donachie 2014)
JT – Justin Trudeau, Leader of Federal Liberal Party (Brownell 2012)
JV – Joe Volpe, Former Transport Critic, Liberal Party (Liberalvideo 2009)
KW – Kathleen Wynne, Premier of Ontario (CBC News 2014d).
MI – Michael Ignatieff, Former Leader Federal Liberal Party (Martin 2009)
MW – Michael Walters, Edmonton City Councillor and Rep. (Maimann 2014)
PL – Paula Law, Reeve Lacombe County (Law 2014)
PM – Pauline Marois, Former Leader Parti Québécois (Marois 2013)
RA – Rob Anderson, Wild Rose Finance Critic (Wood 2013)
RL – Régis Labeaume, Mayor of Québec City (White 2009)
RM – Ric McIver, Former Transport Minister of Alberta (CBC News 2014a)
RS – Raj Sherman, Leader of Alberta Liberal Party (Audette 2012)
TH – Tim Hudak, Former leader Ontario PC Party (Bellemare & Grant 2014)
TM – Thomas Mulcair, Leader of the federal NDP (McKnight & Crawford 2013)

Transport or Public Policy Consultants or Experts

- AJ** – Andrew Jackson, Chief Economist, Canadian Labour Congress (McKenna 2010)
DJ – David Jeanes, President, Transport Action Canada (SCTIC 2009)
GG – Greg Gormick, Toronto-based transport consultant (Audette 2012)
MA – Mario Iacobacci, Conference Board of Canada (De Souza 2009c)
MB – Mark Bunting, Transport consultant (Bunting 1998)
MM – Mark Milke, Fraser Institute (Milke 2012)

* Parenthetical references are given for sources from which my analysis has been inferred.

MN – Marco Navarro-Genie, Frontier Centre for Public Policy (Navarro-Genie & Heinrichs 2012)
MR – Marc-André Roy, Vice-President of CPCS (Roy 2014)
PU – Paul Langan, President of High-Speed Rail Canada (Hadekel 2011)
PW – Peter Wallis, Director of the Van Horne Institute (Wood 2013)
RC – Ron Craik, Founder of Alberta Bullet Train (Alberta Bullet Train 2007)
RG – Richard Gilbert, Transport and Energy Consultant (Perl & Gilbert 2007)
RV – Robert Vineberg, Canada West Foundation (Vineberg 2008)
SH – Scott Hennig, Canadian Taxpayers Federation (Fekete 2007)
SM – Steve Munro, Toronto-based transit policy advocate (Bellemare & Grant 2014)
TL – Todd Litman, Victoria Transport Policy Institute (VTPI 2013)
WB – William Brehl, President, Teamsters Canada Rail Conference (SCTIC 2009)

Journalists, Columnists or Bloggers

AC – Andrew Coyne, columnist with *Maclean's* (Horgan 2013)
DB – Dan Beare, environmental writer and blogger for *Alternatives* (Beare 2013)
DC – David J. Climenhaga, journalist and blogger in Alberta (Climenhaga 2014)
GA – Gary Mason, columnist with *The Globe and Mail* (Mason 2014)
HM – Heather Mallick, columnist with *Toronto Star* (Mallick 2011)
MP – Monte Paulsen, journalist and former contributor to *The Tyee* (Paulsen 2009a)
PB – Paul Berton, Editor of *The Hamilton Spectre* (Berton & Rutherford 2009)
PH – Peter Hadekel, freelance columnist often for *Montreal Gazette* (Hadekel 2011)
PP – Paul Pettypiece, consultant and blogger from Central Alberta (Pettypiece 2008)
PR – Paul Rutherford, city editor for *Ottawa Sun* (Berton & Rutherford 2009)
PS – Paula Simons, columnist with *Edmonton Journal* (Simons 2014)

Businessmen, Entrepreneurs, Corporate Spokespersons

BF – Brad Ferguson, chair of Edmonton Economic Development Corp (Simons 2014)
DE – D.L. Leslie, Spokesperson for Siemens Canada (Fekete 2009)
DV – Derek Vanstone, Vice President of Air Canada (Vanstone 2014)
GF – Gary F. Atkinson, Calgary Airport Authority (Atkinson 2014)
IR – Ian Rainey, US Japan High-Speed Rail (Rainey 2014)
JA – Jack Crawford, chairman of Alberta High-Speed Rail (Henton 2014b)
JG – Joseph Galimberti, Rep. National Airlines Council of Canada (SCTIC 2009)
JS – Joseph Soares, Entrepreneur and former advisor to PM (Soares 2014)
PA – Paul LaLiberté, CEO of VIA Rail (Blackwell 2012)
SL – Sylvain Langis, President, Canadian Bus Association (SCTIC 2009)
TR – Tom Ruth, Edmonton International Airport (Ruth 2014)
TZ – Talal Zouaoui, spokesperson for Bombardier (De Souza 2009c)

*Academics**

AP – Anthony Perl, Urban Studies, Simon Fraser (Perl 2013)

JC – Jeff Casello, Planning, Waterloo (Bellemare & Grant 2014; Lynch 2013)

MJ – Mark Jaccard, Environmental Economics, Simon Fraser (Bataille et al. 2009)

MS – Matti Siemiatycki, Geography & Planning, University of Toronto (Wood 2014)

PF – Pierre Filion, Urban Planning, University of Waterloo (Bellemare & Grant 2014)

PN – Paul Nesbitt-Larking, Political Science, Huron (Nesbitt-Larking, 2010)

Community Activists/Environmentalists/Other

CO – Christyann Olson, Alberta Wilderness Association (Olson 2014)

CS – Colleen Shepherd, Calgary Regional Partnership (Shepherd 2014)

DT – David Thompson, Independent Environmental Writer (Thompson 2009)

MH – Mike Hudema, Greenpeace Alberta (Lamphier 2009)

Conclusion

As the preceding pages have demonstrated, the debate about HSR development in Canada is far more nuanced than one merely between those in favour and those against, or those who see economic, social or environmental benefits, and those who do not. Rather, beneath each viewpoint there lies different EPE narratives and discourses for how, whether and why HSR lines *ought* (or *ought not*) to be introduced in Canada's busiest corridors. Characterizing the discursive 'battle of ideas' between different narratives of HSR in Canada helps to explain some of the puzzling dimensions of the nation's HSR story. For instance, the discursive contest through which HSR's fate has been hashed out helps to explain why one can witness the growing popularity of a 'sustainable bullet train' construct (the emergence of the Ecotrain narrative) while at the same time no genuine action to bring such infrastructure to fruition has been able to manifest. As suggested in the analysis above, this is in part because the actors who hold

* Here I list only certain academics who have publicly stated their political positions about HSR within the civil society spheres (beyond the formal academic community) – not academics who have written about HSR in a scholarly capacity.

political power in Canada, for the most part, have maintained a Zerotrains vision of HSR while those who espouse an Ecotrains rationality (or Turbo-trains for that matter) have been less effective in raising their claims to a level of political legitimacy. Further, the historical battle of ideas surrounding HSR development helps to explain how and why any two ‘neoliberal’ governments can yield such drastically different decisions about proposed infrastructure – since both Ecotrains and Zerotrains narratives are nested within a neoliberal political economic framework. Such complexities inherent to Canada’s political economy and the history of HSR development deserve closer attention, and form the basis of the discussion in Part II of the thesis – to which I now turn.

**PART II:
HIGH-SPEED RAIL AND
THE 'NEOLIBERAL TURN' IN CANADA**

CHAPTER FIVE: Emergence (1964 – 1982)

“The technology of the space age is helping to provide some of the answers to improving our mobility on Earth. One approach to meeting the needs of a more mobile society has been that taken by Canadian National Railway and United Aircraft Corporation. The result [the TurboTrain] is a new stage in intercity transportation.”

- From the promotional film *CN TurboTrain* (Langstroth & Main 1970).

“The key variable in determining Canada’s rail passenger policy during the 1980s turned out to be the government of the day’s fiscal tolerance for subsidizing passenger trains. Policy was expressed as a greater or lesser willingness to preserve passenger trains through subsidy. And in these ups and downs, no policy objective or instruments for an industrial restructuring that might enhance the productivity or competitiveness of VIA’s services were ever institutionalized.”

- Anthony Perl, *New Departures* (2002, pp.123–4).

Introduction

This second part of the thesis focuses on the historical dimensions of Canada’s HSR story. As explained in Part I, this story is inevitably contextualized by *global* moments in HSR development as well as Canada’s underlying political economic setting (which itself is influenced by global political economic transformations). Thus, while the following three chapters each discuss a specific period in Canada’s HSR story, they do so by first discussing the broader contexts, namely a) key shifts within the global political economy; b) important milestones in global HSR development; and c) changes within Canada’s domestic political economy. Such contextualization aims to unpack why Canada’s HSR story unraveled as it did, with a particular focus on the origins of the ‘sustainability argument’ contemporarily used by proponents of the technology.

This chapter narrows in on the period between 1964 and 1982, making the case that these years can be characterized as an ‘emergent’ epoch for Canadian high-speed rail development. Although there were inevitably structural setbacks that would hinder the introduction of genuine HSR lines in both the QWC and CEC, there were equally many promising moments for the technology during these years, as elaborated in the following pages: During this period genuine high-speed passenger *trains* – the ‘Turbos’ produced by United Aircraft Canada - were used by CN in commercial services within the QWC. In addition, the founding of VIA in the late 1970s as a national public passenger rail carrier took place in the context of efforts to modernize rail services and eventually introduce high-speed services in the nation’s most densely populated corridors. However, the Turbos were only used on conventional rail infrastructure and in a conventional manner, never surpassing 160 km/h on regular service runs. Further, in both the QWC and CEC automobiles and airplanes had come to dominate the intercity travel market so substantially by 1980 that – combined with evolving political economic perspectives regarding the role of the state in market intervention (in particular transport markets) – the idea of large-scale investment for HSR was becoming less palatable. This Period of Emergence would end with the cancellation of the Turbos and the associated decline in public rail funding in the early 1980s.

In terms of its concurrent political economic setting, the Period of Emergence roughly maps onto the culminating years of Keynesianism in Canada (with all of the inherent caveats involved in Canadian Keynesianism, as discussed below), even though internationally a number of nations (in particular the US and Britain) had already begun a process of neoliberal restructuring. Thus, despite international transformations, the

Turbotrain narrative (as defined in Chapter Four) served as the predominant ecological political economic backdrop for HSR in Canada during these years; governments were interpreted as playing a key role in guaranteeing certain levels and types of service within the transport sector, investing in research and development of new transport technologies for the sake of modernizing the economy and creating domestic employment, and in managing transport ‘market failures’ such as highway and airport congestion through regulation and government programming. At the same time, the idiosyncratic nature of Keynesianism in Canada, particularly as it was expressed within the transport sector in the wake of the National Transportation Act of 1967, along with growing inter-jurisdictional friction seen between provinces seeking increased autonomy and the centralizing federal government, led to the formation of structural and conceptual obstacles that ultimately blocked genuine HSR development at a time when the technology seemed especially promising.

A Need for Speed: The Early Period of Global HSR Development

The year 1964 was a turning point in both domestic and global high-speed rail development. First, it was in this year that Japan launched the world’s very first high-speed train line – the ‘Tokaido Shinkansen’, between Tokyo and Osaka. These developments were watched very closely in Europe and North America. In that same year, the Canadian Crown corporation offering passenger rail services (at the time, CN) opened its Technical Research Centre near Montreal to experiment with nascent HSR technologies, where only three years later the Turbos would undergo commercial testing (Churcher 2014; Shron 2007, p.36; the TurboTrain is discussed further below). Responding to the Japanese accomplishment, United States President Lyndon Johnson

began working on that nation's first High-Speed Ground Transportation Act as part of his 'Great Society' project, claiming the following in 1965:

In the past 15 years, travel between our cities has more than doubled. By 1985 – only 20 years away – we will have 75 million more Americans in this country. And those 75 million will be doing a great deal more traveling. So, we must find ways to move more people, to move these people faster, and to move them with greater comfort and with more safety (Johnson 1965).

Throughout much of the industrialized world, intercity transportation was growing at almost exponential rates in the 1960s, thanks in part to growing populations, but also to the prevalence of relatively cheap oil and the growing ubiquity of the family automobile and expansion of short haul air services (Hartman 1993). As President Johnson's speech suggests, the growing culture of mobility within industrialized economies was about more than merely capability or the freedom to travel, it was also about modernity; *new* and *faster* technologies were a 'necessity' to connect people between greater distances in less time. Much of this growth in mobility was facilitated by the exponential growth of automobile and airplane travel in the post-war years, but efforts in railway modernization would play their part: For instance, the perceived 'need' for speed was reflected by the marketers at CN at the time, who unveiled the 'Rapido' (meaning 'fast' in Italian) passenger service between Toronto and Montreal in 1965, and later the 'Tempo' (meaning 'time' in Italian) service in 1968 between Toronto and Windsor (Murray 2011).

As detailed in Chapter Three, post-war rail modernization efforts saw significant improvements in rail speeds and quality of service throughout the world. To a certain extent the survival of passenger rail as a mode *depended* on such modernization efforts, given the concurrent growth in automobile and airplane use for intercity travel (Whitelegg et al. 1993). However, while numerous countries engaged in significant

railway modernization efforts in the post-war years, there were in fact less than a handful of nations that were successful in introducing genuine commercial HSR between 1964 and 1982 – Japan, France and Italy, with the first two of these countries building the bulk of HSR capacity (see Table 5A).

**Table 5A: Global High-Speed Rail Development, 1964-1982
(KMs of operational track)**

Period	Japan	France	Italy	Other	Total
1964-82	1804 (76%)	419 (18%)	138 (6%)	0	2361

Data Source: Gourvish (2010); International Union of Railways (2013b).

In these nations plans for rail improvement were coloured by the need to rebuild infrastructure damaged during World War Two (James 2009). Hartman thus concludes that “the continental Europeans and Japanese were... using twentieth century technology” while other nations – notably the UK, the US and Canada, where passenger rail infrastructure was not destroyed – continued to improve upon existing nineteenth century rail technology (1993, p.21).*

The push to modernize inevitably took on a tone of economic nationalism, with new rail innovations seen as a way for governments to accrue prestige both domestically and internationally. Gourvish (2010) has pointed out that the most active HSR-developing countries “have all exhibited a long-term political commitment to modernization, and included the enhancement of rail services as part of their agenda”

* An important difference noted by Hartman involves the existence of dedicated grade-separated and secure right-of-ways for passenger rail in many areas of the UK, whereas in North America passenger rail in almost all instances was run on freight-dominated infrastructure.

(p.31). The presence of HSR in these nations has been interpreted as an international marker of progress. It is no coincidence, for instance, that the very first HSR line in Japan's busy Tokaido corridor (connecting Tokyo and Osaka) was completed in time for the 1964 Olympics in Tokyo.* In France, a political commitment to rail modernization can be seen as early as the 1950s, when a concerted effort was made to develop high-speed technologies to break existing global speed records (Ibid). Since then the Société Nationale des Chemins de Fer Français (SNCF) – the state-owned French rail company – has consistently engaged in high-profile rail speed tests with the goal of continually setting new records (see Wüst 2007).

While international prestige was an important motivating factor for early HSR development, so too was finding ways of addressing transportation capacity limitations. Many of the early HSR lines were built in densely populated corridors where intercity transport systems were becoming oversaturated with passengers. The Tokaido corridor, at a distance of 515km, was home to 40% of Japan's population; Its conventional rail services were effectively maxed-out when the first Shinkansen was introduced as an additional mode in that corridor (Matsuda 1993). Similarly, the Paris-Lyon corridor, also home to over 40% of the French population, faced considerably high conventional rail traffic in the 1970s, serving as the impetus for increasing capacity through higher speeds and more modal options (Strohl 1993). These early global HSR developments were

* Similarly, a more recent extension to Niigata was built just before the 1998 Winter Olympics. The first HSR line in China, between Beijing and Tianjin, was built in time for the 2008 Olympic games in that nation as well.

therefore not solely meant to create new transport markets, but also to alleviate existing over-saturated transport markets.

Given the backdrop of global Keynesianism in the 1960s, early HSR projects were characterized by the state's compulsion to involve itself in transportation markets through a host of coordinated actions – including major investments in infrastructure, implementing transport regulations, owning and operating the infrastructure and service provider, adding new electrical generating capacity, and in some instances enacting new policies or tolls and tariffs to shape the consumption of various modes. For instance, Gourvish notes how in Japan investment in electric rail in the 1960s “was consistent with Japan’s long-term energy policy, which sought to reduce the country’s dependence on oil” (2010, p.10). This was also the case in France with the development of the TGV: “An additional consideration was the desire to create a major transport network which was economical in terms of energy use and independent of oil supplies” (Ibid., p.11). In both Japan and France, new HSR lines eventually ‘paid for themselves’ (Okada 1994; Meunier 2002) and were successful in reducing national oil dependence, thanks to coordinated policy efforts and regulatory measures made alongside the investments. Okada (1994, p.16) claims that the Tokaido line reduced Japan’s consumption of oil by 360 million liters in 1985.

In its first six years of service, the Tokaido Shinkansen carried 300 million passengers, rivaling air travel competition (Matsuda 1993). The Tokaido Shinkansen was developed by Japanese National Railways (JNR), at the time a publically-owned corporation with somewhat of an ambiguous relationship with government (it was not fully autonomous, as originally intended in its mandate; Smith 2003, p.225). The decision

to invest in new high-speed trains was made by the Japanese government in 1958, under the expectation that a new line could be built within five years at a cost of \$2.03 billion (US). Japan appealed to the World Bank for a loan to help finance the project, promising not to renege on its commitment and to use safe and tested technologies (Estler 2013, p.119). Inevitably, the costs began to push far beyond the original budget (by nearly a billion dollars), forcing the president and vice-presidents of JNR to resign from their public posts. Nevertheless, the project was completed in time for the 1964 Olympics, and the country had succeeded in becoming the first in the world to operate commercial passenger trains which regularly reached speeds above 200km/h (Ibid.). Arguably, the increased presence of the state within the economy – both through its arms-length involvement through JNR and the national policy and financing context – facilitated coordinated and strategic action to ensure that HSR fit within broader social objectives (in particular reducing energy use and alleviating highway congestion between Tokyo and Osaka).

A similar argument can be made about the early European HSTs – even in cases where development efforts did not manifest in genuine HSR lines – such as in Great Britain. The Intercity 125, a diesel traction train introduced in 1976 that connected London to Bristol and Swansea, technically qualified as an HST (Nash 1993), but as stated earlier the line itself was of a conventional character.* The modest speed improvements to existing rail services were well received and the original HST was

* Akin to Canada's LRCs, the Intercity 125 was not electrically-powered and only narrowly surpassed the 200km/h speed threshold (though it did not regularly travel at such speeds as it was operated on conventional track).

considered a success, having provided “rich rewards both commercially and in terms of broader social benefits” (Ibid., p.88). The line was owned and operated by British Rail, which was a public agency developed after the nationalization of four major regional railways in 1948. Development of the HST began in earnest in the mid-1960s, as the government railway did not want to be left behind recent accomplishments in Japan and concurrent developments in France. The British engineers explored both the possibility of enhancing conventional systems (which eventually manifested in the Intercity service), as well as a new electric traction program called the Advanced Passenger Train (APT) which would have qualified as a genuine HSR system. However, the latter project faced significant hurdles throughout the 1970s with a number of technological setbacks and numerous labour disputes which put construction on hold (Estler 2013), not to mention a national Treasury which did not look keenly upon funding British Railways nor the high cost of electrifying rail systems (Gourvish 1986).

Production of revamped BR vehicles largely took place at the Derby Railway Works – an industrial compound incorporated into the BR structure in 1947 (thereafter becoming the ‘BR Workshops’). The British Rail Research Division as well as the Department of Mechanical & Electrical Engineering and later British Rail Engineering Limited were also centralized in Derby, allowing the British Railways Board to coordinate rail development throughout the 1950s and 60s by overseeing all phases of the research, design and production chain (Marsden 1989).^{*} Thus, as in Japan, the national

^{*} The city of Derby is a renowned manufacturing hub colloquially known as the birthplace of the industrial revolution (since it had the world’s first fully mechanized factory). A number of transport-based firms have been based in Derby, including (most notably) Rolls Royce, which moved to Derby in 1908, and Bombardier, which operates one of its main UK production lines in the city (Truslove & Glover 2014).

government was involved in numerous dimensions of rail modernization at an arms' length, including research and design, production, capitalization, operation and promotion.

While Italy followed Japan as the second nation to introduce genuine HSR, its postwar HSR development program was, ironically, riddled with problems, including “rising expenditure, inflation which reduced the initial capital, and wastage and delays due to technical errors” (Giuntini 1993, p.60). Although the first section of the Rome-Florence Direttissima opened in 1977, the full line was not opened until the mid 1990s. In Italy the national government played a direct role in holding back rail modernization through the implementation of transport policies that heavily favoured road transport and the national car industry (led by Fiat). A powerful ‘road federation’ emerged in the 1950s, bringing together the domestic cement, oil, pneumatic tire and automobile producers in an underhanded pact highly reminiscent of the so-called ‘GM streetcar conspiracy’ in the US.* The result in Italy, as in the US, was “a heavy wave of investment in national transport infrastructure...” with precious “little invested in the railways” (Giuntini 1993, p.58). It was within the context of Europe’s increasing integration in the postwar years, in particular the introduction of the Trans-Europe Express service which linked Italian railways with those in France and Germany, as well as Italy’s desire to “conform with the vast [ongoing] process of modernization and technological improvements” (Ibid, p. 60) in Europe, that created a space within which the state felt it

* The latter scandal involved the buying up and decommissioning of electric streetcar lines throughout the United States and their replacement with bus operations and paved highways. The colluding culprits, including General Motors, Firestone, Standard Oil, Mack Trucks, and the Federal Engineering Corporation, were eventually convicted of attempting to monopolize the interstate transport market (Wilkins 1995).

had to activate its HSR development regime in the early 1970s (as problematic as it turned out to be). Before the end of the decade HSR service was available between Rome and Città della Pieve, and Italy had become the first European nation to introduce genuine HSR (Giuntini 1993).

While Italy may have been the first to successfully introduce commercial HSR operations in Europe (in 1977), the introduction of the TGV in France in 1981 acquired greater global acclaim. Its early development was also marked by considerable state involvement. The SNCF, co-builder (along with Alstom) and operator of the TGV, was established in 1937. After World War Two it began collaborative projects with other sectors (in particular the engineers in the state-owned electricity company) to enhance production and research operations. As Beltran (1993) says, “the political side of the [TGV] project was facilitated by close collaboration with the Ministry and an alliance with the builders of the system” (p.36). The SNCF was reorganized in the 1960s, and interest in building a high-speed commercial operation was further inspired by developments in Japan. As elsewhere, France had already begun to electrify some of its intercity railways before the war, and greatly expanded electrification immediately following the war as much of the network had been destroyed. After the oil shocks of the early 1970s planning for electric rail and electric generating capacity expansion took place in concert as part of a national policy to reduce oil consumption (Estler 2013, p.21).

The first line linking Paris to Lyon was opened in 1981, and considerable attention was paid by the state to providing an open and accessible transport system for all citizens (Meunier 2002). As the Ontario/Québec Rapid Train Task Force pointed out in 1991, the state played a prominent role in the introduction of the TGV, not only

through financing the new rail system, but also in using its coercive powers to reshape the travel market to favour the TGV:

“The success of high speed rail systems elsewhere has been related to the willingness of governments to shape consumer choice by policy interventions in the market-place or by direct financial support. For example, in the Paris-Lyon corridor, it is a matter of policy that there is no intercity bus service, and that air fares exceed rail fares” (p.23).

Accounts such as this identify the significant efforts of the state at the time in developing and promoting HSR. In short, during this period HSR was primarily seen as a tool to be used by the state to help in the efforts to modernize domestic economies – to improve transport efficiencies through speed gains, reduce growing rates of congestion on intercity highways, and reduce national dependencies on oil imports. Through state-controlled or quasi-independent national rail agencies, governments could enact the requisite policies to ensure that the associated technological advances, newly created employment, and related industries benefited the domestic economy. As noted below, such motivations and development regimes were significantly different than what would be seen in subsequent periods of global HSR development.

The Demise of Global Keynesianism, the Rise of Neoliberalism

The early period of HSR development as a state-driven initiative was largely due to the predominance of Keynesian and Fordist regulatory regimes witnessed within the political economies of the advanced capitalist nations in the early post-War years. However, this particular moment in the capitalist mode of production, in which government investment and regulation were typically used as political tools to guide national social and economic policy (Sparke 2013; Ventelou 2005), would begin to lose influence in the 1970s, with consequences for the subsequent wave of rail investment. As noted in Chapter Two, a

core theme of Keynesianism was that modern capitalism required an active state to counteract the structural flaws inherent to the capitalist system (Time Magazine 1965). As a more moderate political economic regime critical of *laissez-faire* ideology, Keynesianism (at least in theory) was open to the idea of demand management policies, public ownership, decommodified spaces, higher tax rates, and large-scale government expenditures (Patomäki 2009). As noted above, the manifestation of Keynesianism was coloured by different national contexts; for instance, the U.S. faced greater public wariness about the intentions and motivations of macroeconomic advisors than did the U.K., where it was commonly assumed that macroeconomic managers were inevitably acting in the national interest (Hirsch 1976).

The transitional period which led into global Keynesianism took place between the mid 1930s and mid 1940s, a decade marked by World War Two and the publication of Keynes' grand oeuvre (Keynes 1936). This decade was followed by somewhat of a 'heyday' for the political economic creed, in which the political economic doctrine largely dominated decision-making circles in much of the Western industrialized economies, particularly after the Bretton Woods order was conceptualized in 1944 (Albarracín 2002). A subsequent transitional period, during which Keynesian theory began to lose influence, appears to have taken place from the late 1960s through to the mid 1980s (DiLeo 2009). Nevertheless, the latter transition was highly uneven on the global stage: As noted below, the Keynesian impulse maintained its influence in a number of nations (including France, Spain, and Canada, for example) for considerably longer than in the United States or Great Britain.

This shift from global Keynesianism to neoliberalism was thus largely terraced in the way it took place at different speeds and intensities in different spaces, and yielding different outcomes. By the beginning of the 1970s Keynesian economic theory would begin to wane in influence within the very capitals where it had once been so powerful – London and Washington D.C., in particular. This is somewhat ironic as in some respects the practice of Keynesianism had achieved exactly what it had sought. For instance, a 1965 article in *Time* pointed out how “in Washington the men who formulate the nation’s economic policies have used Keynesian principles not only to avoid the violent cycles of prewar days but to produce a phenomenal economic growth and to achieve remarkably stable prices” (Time Magazine 1965). Nevertheless, the globalization (and growing wealth) of multinational corporations (MNCs) in the post-war decades, along with the abandonment of fixed exchange rates and the gold standard in the early 1970s, began to erode both the national orientation and power of domestic monetary policies. After the oil price shocks of 1973, Keynesian interventions seemed less effective in reversing the concurrent problems of stagnated growth and inflation (or ‘stagflation’) in both Europe and North America, thereby creating a space for new political economic modes of regulation (Harvey 2005).

It was the coming together of various strands of anti-Keynesian thought within the Mont Pelerin Society in 1947 that would sow the seeds of a transnational project to transform the modern Keynesian welfare state (Peck 2010, p.17). While ‘neoliberalism’ did not yet have a name in the early 1970s, the theories of Mont Pelerin and the Chicago

School* began to find an audience amongst American and British economic policy makers and advisors. Some of their thinking went as follows: Governments ought to stop meddling with markets so as to yield a genuine price equilibrium reflecting supply and demand; trade unions have acquired too much power and as a result are inflating wages; government overspending has kept tax rates too high (to yield enough revenue for continued spending), and so it would be better to keep tax rates low as an incentive for businesses to invest in the economy; state bureaucracies and agencies have become too big, too expensive to maintain, and have overstepped their reach, and so these public assets should be privatized or denationalized where possible; individuals need to take more accountability for their own socio-economic position so as to relieve the state of its costly and burdening ‘nanny’ role. These were some of the key faults that policy-makers in the West began to see with the Keynesian welfare state (Whitehead & Crawshaw 2012; Harvey 2005; Teeple & McBride 2011; Peck 2010).

To add to this, the corporate and financial elites of the mid-20th Century were also displeased with the outcomes of Keynesianism, since their share of global capital and the rate of profit had begun to decline in the middle decades of the century. As many critical intellectuals have argued (Chomsky 1999; Harvey 2005; Klein 2007) one of the motives for economic restructuring during the 1970s was therefore the restoration of upper class power and wealth. As Keynesian policy had fomented the growth of a large middle class in many nations, the argument goes that business elites used their influence over

* The intellectual fodder for the neoliberal transition was provided by neo-classical monetarists, in particular members of the famed Mont Pelerin Society such as Milton Friedman, Friedrich von Hayek (Friedman’s colleague at the University of Chicago, hence the association between neoliberal theory and ‘the Chicago school’), and Ludwig von Mises (Hayek’s Austrian mentor).

decision-makers to sway economic policy for the purposes of restoring profitability and, indirectly, elite class power (Duménil & Lévy 2011). Thus, by the mid 1970s, given the backdrop of a global economic downturn, stagflation in a number of industrialized nations (most notably Britain), rising unemployment, and growing debts, everyday citizens joined the political and business elites in questioning their faith in the Keynesian regime; a new economic creed (or more accurately the resurgence of an old economic creed) was needed to stop inflationary pressures, create growth, restore profitability and prompt new waves of investment (Whitehead & Crawshaw 2012).

By 1980 both the United States and the United Kingdom had embarked upon major political economic transformations. The neoliberal state's de-prioritization of full employment and social welfare were consolidated through the coming to power of Margaret Thatcher in the United Kingdom in 1979 and Ronald Reagan in the United States in 1980. These two political leaders in particular would become just as well associated with neoliberalization as the political economic theorists they promoted.* As Peck (2010) points out, these two economies alone accounted for over 30% of the world's GDP at the time. The two global political and economic powerhouses would embrace an "especially assertive form of neoliberal politics" (Ibid. 21), in some cases cracking down on organized labour through lockouts or mass layoffs. Thus, by the early 1980s two of the world's most powerful nations had spearheaded what would eventually become a global-scale transition towards neoliberalism, influencing even those nations

* Thatcher famously slapped down a book by neoliberal thinker Friedrich Hayek at a cabinet meeting and told her colleagues "this is what we believe!" (Peck 2010).

which for the time-being still held true to the Keynesian regulatory model and those which were part of the ‘Communist bloc’.

Keynesianism with Canadian Characteristics

Despite ongoing global transitions towards neoliberalism, the Canadian political economy by 1980 for the most part remained entrenched within Keynesian principles, albeit with some unique characteristics. As with the global transition, it is difficult to place clear start or end dates on the Keynesian period domestically. At the same time, in taking a macro-view of historical change, there is something qualitatively different about the decades of the mid-Twentieth century, which are distinguishable by the tremendous amount of broad public investment poured into infrastructural megaprojects or initiatives of national significance, and the level at which the state expanded into numerous spaces and spheres in ways that would no longer be accepted after the neoliberal transition. Even Conservative governments in the early 1920s (led by Robert Borden and Arthur Meighen) held an appreciation for extensive government oversight of markets (perhaps best exemplified in the decision to assume government ownership of a number of bankrupted railways between 1918 and 1923, most of which were eventually consolidated within Canadian National, a new Crown corporation founded in 1919).

Throughout the 1920s, 30s and 40s – most of which William Lyon Mackenzie King was Prime Minister (the main exception being Bennett’s rule from 1930 to 1935) – the federal government continued to push through a number of initiatives which began to establish a truly interventionist and welfarist state in Canada. This involved the introduction of old age pensions (in the 1930s) and unemployment insurance (in 1940), the formation of the Canadian Radio Broadcasting Commission in 1932 (later the

Canadian Broadcasting Corporation in 1936), the establishment of the Bank of Canada in 1934 (and its subsequent nationalization in 1938), the formation of the Canadian Wheat Board in 1935; the founding of Trans-Canada Airlines in 1936 (later becoming Air Canada); and the formation of the National Film Board in 1939. These nation-building initiatives laid the foundation for what Moscovitch calls the ‘interventionist phase’ of Canadian federal politics, which he claims took place between 1941 and 1974. Not only was the government intervening in the production and operation of transport, energy, manufacturing, and national culture – measures which to a certain degree were taken to centralize the national war-time effort in the early 1940s – it was also involving itself in the nation’s social relations through a broad array of policies and programs: “The federal government instituted a wide range of measures including the construction of housing, controls on rents, prices, wages and materials, the regulation of industrial relations, veterans pensions, land settlement, rehabilitation and education, day nurseries and the recruitment of women into the paid work force in large numbers” (Moscovitch 2006). These mid-Century decades were the ‘heyday’ of the Keynesian welfare state in Canada. Prime Ministers such as Louis St. Laurent (1948-1957), Lester Pearson (1963-1968) and subsequently Pierre Trudeau (1968-1979; 1980-1984) upheld this interventionist role to varying degrees as they oversaw the creation and institution of the Canada Pension Plan, universal health care, the expansion of the public service and the formation of numerous Crown corporations. The Post-War years also witnessed the development of a ‘regional development policy’ within which the federal government sought to find a regional balance in economic activity, a motivation which was responsible for the decision to set up a fiscal equalization program in 1957 (Savoie 2003).

As part of its concerns for regional balance the Keynesian state also paid a great deal of attention to building a national transportation system in Canada. In addition to its semi-monopolies in the air and rail passenger markets through Air Canada and CN,* the state funded the development of a national highway network, developed a number of transport-oriented regulatory agencies (such as the St. Lawrence Seaway Authority – a Crown corporation), formed a state-owned oil company to produce transport fuels (Petro-Canada), and even took ownership over a number of transport vehicle producers (Katz-Rosene 2013). It also legislated domestic procurement policies which prompted a number of American corporations to set up production facilities in Canada. As Murray (2011) writes, in 1950, GM set up its Electro-Motive Division (GM-EMD) – a locomotive assembly plant at London, Ontario: “From 1950 to 1988... GM diesels for CN itself were built by GMD at London. In 1988 GM consolidated North American locomotive assembly operations at London” (p.210). In short, from network planning to the construction of infrastructure to the operation of public services, the mid-Century decades saw considerable state involvement.

Of course, the Keynesian state was fundamentally a capitalist state, and as such its own interventionist policies often worked in contradiction to broader attempts at fostering competitive markets. This is particularly the case in the Canadian transport sector, which after the 1967 National Transportation Act (NTA) was (at least in theory) supposed to be distanced from state influence, with the exception of rail shipping rates which were

* In contravention with its own transport policy emphasizing competition, until the late 1970s the federal government placed restrictions on the routes available to private competitors such as CP Air and CP Rail.

subject to regulation (see Studnicki-Gizbert 2006). In this context the contradictory role of the state in facilitating the rise of automobile and air travel in the post-war years – through the financing of highways and airports, ownership of airlines, and close relations with the automobile and aircraft research and production industries (Glazebrook 1964; Drury & Sealey 1985), is worthy of note given its role in the mid-Century decline of domestic passenger rail. The federal government’s industrial policy during these decades also contradicted the competition-focused NTA as it sought to bolster the Canadian manufacturing sector and domestic research and design communities. As Jenkin notes, “the 1960s also witnessed the emergence of a number of specialized federal departments or agencies, designed to improve the government’s management of the economy, deal with emerging technologies, or help industry expand in foreign markets” (2006).

In some ways this contradiction manifested in various *laissez-faire* inklings or moments, the earliest of which can be seen in the transport policy of the postwar years. For instance, in 1957 the federal government agreed to allow CP (a private company) to break the transcontinental monopoly hitherto held by the Crown-owned Trans-Canada Airlines. This decision marked a precedent in which the federal government openly “expressed itself in favour of competition,” even at the expense of its own enterprises (Ashley & Smails 1965, p.259). This approach was adopted again in the 1961 Royal Commission on Transportation (the ‘Macpherson Commission’) which “recommended that transportation policy rely more on market forces” (Dupuis 2013, p.3). Again in 1967 the first NTA followed many of the Macpherson Commission proposals and legislated the federal government’s commitment to open competition within the transport market, despite some modes or operators being wholly dependent on the government (Gratwick

2001). Yet as detailed in Chapter Six, the marketization and liberalization of the transport sector would eventually isolate many Crown corporations and would result either in their privatization or what Whiteside (2012) calls ‘commercialization’ – when a Crown corporation or agency is forced to operate as if it were a for-profit private company.

Thus the Canadian transport sector experienced a degree of liberalization long before a wholesale shift towards neoliberalism. As Wallace points out, and as discussed further below, the originating moments of the state’s retraction from transport can be traced back to the Keynesian period:

“The National Transportation Act of 1967 began the process, but regulatory changes in the United States after 1980 and Ottawa’s growing fiscal crisis in the 1990s eventually forced a thorough re-evaluation of government’s role in this sector. By 2000, direct federal involvement in all modes of transportation – port management, the St. Lawrence Seaway, Canadian National Railways, and Air Canada – had been severely reduced or eliminated” (2002, p.169).

To be sure, early expressions of *laissez-faire* in Canada were bolstered by the concurrent transformations taking place in the 1970s in Great Britain and the United States – two nations with very close political and economic ties to Canada. However, while “Canadian thinking on regulating transportation had always been influenced by the US model, Canadian policies and practices were quite distinct” (Studnicki-Gizbert 2006). Thus, despite ongoing international transformations or the rise of *laissez-faire* Keynesianism in Canada’s transport sector, it would be inaccurate to characterize Pierre Trudeau’s final term as Prime Minister in the early 1980s as ‘neoliberal’. For instance, the Trudeau government’s National Energy Program (NEP) had all the hallmarks of a highly interventionist and nationalist state, serving as “one of the most sweeping government policies ever undertaken in Canada” (Bregha 2006). Due to such policies, the Keynesian

impulse remained present (if not dominant) in Canada at the very least into the middle of the 1980s. It was not until after 1984 that a new Progressive Conservative government (led by Brian Mulroney) initiated a lasting process of economic liberalization, introducing a more fervent laissez-faire ideology in a transition which would then follow in the provinces, at the very least those where HSR was a realistic prospect – Alberta, Ontario and Québec (see Chapter Six).

Canada's unique federalist structure would also contribute to the idiosyncratic nature of the nation's political economy. With the provinces holding political jurisdiction in numerous areas – from energy production to education policy to health care provision – the political economy of a given space in Canada has effectively been mediated by the various scales of jurisdictional influence involved. As explained in Chapter Six, Canada's largest provinces* would feature predominantly Keynesian governments deep into the 1980s – with Québec Premier René Lévesque (1976-1985), Ontario Premier Bill Davis (1971-1985) and Alberta Premier Peter Lougheed (1971-1985) all serving multiple terms as populist leaders seeking to develop their respective provincial economies through various interventionist means. This is not to say that the spirit of statist interventionism extended to cross-border or inter-jurisdictional projects: Québec's historical attempts to seek autonomy, or build its own welfare state in the 1960s and 1970s instigated by Liberal Premier Jean Lesage's 'Quiet Revolution' (Lesage was Premier from 1960 to 1966), or Ontario's efforts to achieve a certain degree of independence from federal

* Or specifically, those directly implicated in HSR development – Ontario, Québec, and Alberta. British Columbia has historically been the third most populated province after Ontario and Québec, but is left out of this account because it was not seriously contemplating HSR.

centralization, both worked against federalist attempts to build a broader national-level welfare state consensus. As Pigeon writes, when the federal government introduced a number of social programs (such as employment insurance and old age pensions) in the 1950s, “both Québec and Ontario opposed this intrusion by the federal government in their areas of responsibility, insisting on the principle of provincial autonomy” (Pigeon 2014). The coming to power of the separatist Parti Québécois in 1976 under the leadership of Lévesque, and the subsequent national-level debates about national unity had a chilling effect on trans-provincial cooperative infrastructure development that would last at least until the late 1980s.* Within five years of the PQ coming to power and their introduction of the new language legislation, some 130,000 Anglophones left Quebec for other provinces (Marmen & Corbeil 2004, p.102). In Alberta, anger towards the federal government’s attempts to centralize energy governance resulted in the outgrowth of ‘Western separatism’ (Stein 2006). It is unsurprising then that this was a period of relatively little interprovincial or interjurisdictional cooperation, as Canada’s intergovernmental policy relationships were increasingly “constrained” (Perl 2002, p.114). In sum, the shift from a characteristically Keynesian economy to a contradictory *laissez-faire* variant of Keynesianism in Canada (a process undoubtedly shaped by the ongoing global transition towards neoliberalism), combined with the unique political histories of Canada and the provinces (and contested relations between those jurisdictions), manifested in an idiosyncratic political economic trajectory in Canada in

* A key exception would be the Interconnection Agreement between Hydro-Québec and Ontario Hydro, signed in February of 1979.

the 1970s and early 1980s which set it apart from the model of neoliberalization initiated in the United States and the United Kingdom.

The Emergence of HSR in Canada

The underlying global and domestic political economic contexts described above, as well as the concurrent development of HSR technologies abroad during the 1960s and through to the early 1980s, all shaped Canada's Period of Emergence of HSR. These underlying forces helped lead to the development and use of genuine high-speed trains in the QWC directed by a prevailing TurboTrain narrative, while at the same time contributing – somewhat contradictorily – to the notion that governments *ought not* to make significant public expenditures on dedicated tracks for HSR, as this would impinge on the competitive nature of the transport market.

Between the years 1968 and 1982, CN (and subsequently VIA Rail) operated passenger services on the Turbos, a technology which as of 2013 still held the title of fastest production train in North America (at 275 km/h) – a feat it achieved in 1967 (Shron 2007). In short, Canada did indeed have a *fleet* of genuine high-speed trains in commercial operation by December 1968, and at that time it would have been the second nation in the world to have accomplished this feat, preceding the United States – which also used Turbos in a similar context – by approximately six months (Ibid.). However, it is important to consider why the Turbos *never* operated at their capable speed during regular service runs, and more importantly why a dedicated track infrastructure for passenger trains was never built in Canada.

Keynesian interventionist policies ensured that the Turbos were built in Canada, bolstering the domestic manufacturing and HSR research and design industries (Bateman

2012).^{*} The trains were originally designed by United Aircraft Corporation of Canada in partnership with Pratt & Whitney, and were used both by Amtrak in the United States and CN (and thereafter VIA) in Canada. The Canadian vehicles were built in Longueuil, Quebec by Montreal Locomotive Works (MLW). During their decade and a half of regular service the Turbos “were given pride of fleet status... and maintained in excellent condition until shortly before their retirement” (Shron 2007, p.10). The trains did face a number of technical obstacles – including issues with their abnormally large width, frequent engine overheating and problems with freezing brakes at winter time, yet by far the biggest challenge to the fleet was the lack of dedicated infrastructure upon which to operate (Bateman 2012).

The failure to build specific passenger-only track infrastructure during the 1970s was itself the result of a few factors, each of which can be linked to the *laissez-faire* policies adopted in the wake of the first NTA and Canada’s unique variant of Keynesianism expressed within the nation’s transport sector: First, after the NTA there was less willingness on the part of the government to invest additional funds into passenger rail infrastructure. The very companies that operated passenger trains in Canada during the 1960s, Canadian Pacific and Canadian National, were also the operators of competing modes (airlines in the case of CP, and freight trains which competed for track time in the cases of both CN and CP). The underlying policy of competition meant the two companies therefore had virtually no incentive to improve

^{*} Not only were the *trains* built in Canada, but great attention was paid to ensuring the internal furnishings, the modern food served on board, and even the outfits worn by the train hostesses were all designed, tested and produced domestically (Langstroth & Main 1970).

passenger rail services, as doing so would cut into the more profitable aspects of their businesses (Greenlaw 2007). Perl suggests that one of the only reasons CN and CP remained willing to cover the costs of unprofitable passenger rail in the early post-war years was because they were able to raise freight shipping rates: “In the 1950s and early 1960s, both CNR and CPR could cross-subsidize passenger losses from freight revenues because air and truck competition had not yet reached the point where rate increases would simply drive business away” (Perl 2002, p.86). This was no longer the case once an infrastructure for freight (both for trucking and airlines) emerged.

This relates to a second important factor – the long-term decline of rail’s market share in intercity passenger transportation as motor vehicles and airplanes became increasingly popular (no doubt bolstered by the speed impediments faced by the constricted Turbos, and a growing preference for more time-efficient trips). Passenger rail would reach its zenith (in terms of proportional mode share) around mid-Century. As Camu et al. argue, “rail was the undisputed leader in transportation of both commodities and passengers, with waterways and roads in the role of subsidiary feeders,” well into the early 1950s (1964, p.246). Already by 1920 there were over 6400 stations listed in the combined timetables of the Canadian Pacific and Canadian National, and at the time, “nearly every urban place [in Canada] was served by at least one passenger train a day” (Dean et al. 1998). Nevertheless, growth in intercity rail travel in Canada began to level off after the 1930s (Kerr 1960).

The 1950s marked a real turning point: Within two decades roads and highways had largely replaced rail as the main method of intercity transport, with the number of rail passengers hovering just over 20 million by 1970 (according to Palmer 1988), about a

third of the number of bus passengers at the time.* Buses also faced a decline in the market share of intercity transportation in the postwar years; by the early 1950s there were about 120 million intercity bus passengers, yet only a decade later there were less than half that amount (Bunting 2004, p.13).† Meanwhile, air travel grew at an exponential rate after World War Two, attracting passengers from long distance rail and bus routes. Although there were only around 5.3 million air passengers in the early 1960s, by the late 1980s the number approached 50 million, with the busiest city pairs falling within the Toronto-Montreal-New York City triangle (Tretheway 2013; Camu et al. 1964). The opening of new air services between small urban airports like Toronto Island and Rockliffe (Ottawa) air base, and the concurrent development of Short Take-Off and Landing (STOL) aircraft – in particular de Havilland Canada’s (DHC) ‘Dash-7’ planes in the early 1970s – fit neatly into the government’s strategic aim of developing and promoting Canada’s regional airline industry. It also served to popularize this mode of travel within Canada’s busiest transport corridors (Viking Air 2014). As Soberman (1995) and Lukasiewicz (1976) have both explained, the federal government played a decisive role in the development of STOL technologies as part of an effort to generate international demand for the Canadian technology, yet this came at the expense of much

* A significant part of the precipitous decline in intercity bus travel may be due to changes in the way statistics were collected. As noted in the Standing Senate Committee on Transport and Communications’ report on intercity bus service in Canada, “confusion [about declining riderships] arises from the way bus passengers were counted in the 1970s, when even a ride of three miles could be counted as intercity. Bus operators argue that municipal amalgamations and the growth of urban transit have made comparisons meaningless” (2002, p. 26).

† Although the statistics vary depending on the source, by 2010 intercity bus travel would account for no more than 2% of domestic travel, serving just over 4 million passengers annually (Transport Canada 2012a).

needed track improvements required to allow the Turbo Trains to operate at higher speeds.

Like air travel, the intercity automobile market was supported through new legislation and major funding of road and highway infrastructures. The 1949 Trans Canada Highway Act saw additional major government investments in a transcontinental highway system, and by 1956 Highway 401 in the Greater Toronto Area had been completed. The growth of automobile use was exponential in the postwar years, having been somewhat postponed by the Depression and World War Two (Wallace 2002, p.168). Between 1941 and 1961 the number of automotive vehicles in Canada increased by 250% (Camu et al. 1964, p.252). Thus, in contrast to the dominance of *rail* in 1950, by the 1970s automobiles and airplanes almost exclusively shared the vast majority of domestic passenger traffic (Wallace 2002).*

A third factor working against the development of dedicated track infrastructure for Canadian passenger rail services during the Period of Emergence was the increasing pressure and lobbying regarding the ‘unfair’ nature of passenger rail subsidies. Whereas in 1962 the prevailing ethos of Keynesian interventionism facilitated a landmark agreement between the railways and the federal government in which the latter agreed to fund passenger rail as a point of public interest, upon the emergence of *laissez-faire* Keynesianism – following the 1967 NTA in particular – there was perennial criticism from an array of private transportation industries which received no such support, in particular the Canadian Motor Coach Association and car rental companies (Greenlaw

* By 2013 automobile traffic alone accounted for 92.6% of domestic intercity trips.

2007, pp.25–29). The policy of promoting unfettered competition thus worked against the broader interventionist beliefs inherent to the TurboTrain narrative.

A fourth factor in the failure to build dedicated track infrastructure in the 1960s and 70s had to do what Perl identifies as the lack of a “critical mass of industrial design and engineering skills for passenger railroading” in Canada compared with that seen in Japan, France or Germany (Perl 2002, p.88). As a result, Canada’s ‘rail policy community’ – at the time a relatively closed and elite group of policymakers, bureaucrats at state-run agencies, and a few influential private sector managers (at CP in particular) – attempted to spread the costs of declining passenger rail broadly. Perl goes on to explain how this was a largely insular group which lacked the required skills to bring about the type of technological leap required for the development of a dedicated electric HSR system:

“As a result of this insular orientation by government officials and agencies, Canada’s rail policy community was essentially a state directed network during the transition from subsidized regulation to public enterprise. But unlike the state directed network that would launch the TGV project in France, Canada’s rail policy community lacked a critical mass of engineering expertise with the capacity to integrate new technology into new ways of doing business. Attaining the passenger train’s potential in Canada’s most promising travel markets would thus have to be pursued with limited technological innovation” (Perl 2002, p.113).

This additionally helps explain why the Turbos were specifically designed to run on *existing* tracks as a cost-saving measure (Langstroth & Main 1970). Ironically, some years after successful operation this fact made it difficult to justify building dedicated passenger tracks. Further, additional confusion would be sowed in the 1980s when discussions regarding the privatization of CN surfaced, since the nation’s public passenger rail carrier (VIA) would suddenly find itself without government-owned tracks

(see Chapter Six). Together, these factors conspired together to block investment for the dedicated tracks required to match the existing fleet of high-speed *trains*.

VIA Rail and the State's 'Insincere Flirtation' with High-Speed Rail

Despite the lack of dedicated HSR infrastructure and the concurrent decline of passenger rail during the 1970s, hopes for railway modernization and specifically high-speed rail development were not entirely dashed. Instead, such hopes took shape in the creation of VIA, an agency of the Crown charged with operating the nation's passenger rail services. By the time of the first NTA, CP had already indicated its desire to pull out of unprofitable passenger rail altogether, and no longer offered services in the QWC. CN would continue to attempt to bolster its passenger rail services, with some success in the late 1960s, particularly after the introduction of the Turbos. Yet overall, passenger rail operations produced a net loss for both firms. By 1976, CN also decided to absolve itself of passenger rail and made a "move toward a market-oriented corporate philosophy" (Perl 2002, p.117), stating in its annual report of that year that while "there may be a feeling that a Crown Corporation like CN should be concerned with social responsibilities rather than profits... it would, however, be socially irresponsible for CN to provide services without any concern for their economic viability" (Canadian National Railways 1976, p.13). The Trudeau government, wary of the public outcry over the impending disappearance of national passenger rail services, felt it had to step in to protect a service with deep national folkloric significance. At the same time, it too sought to promote "a much greater degree of economic self-sufficiency" and "a substantial reduction in present levels of subsidy to rail passengers" in its new passenger rail strategy (Transport Canada 1976a). With these plans in mind, it nationalized VIA as the country's

sole national-scale passenger rail carrier, after months of negotiation with the two major rail companies. At the time CN was reportedly “delighted to get rid of [VIA]” (Greenlaw 2007, p.62). VIA was formed by an Order-in-Council, effectively placing it under the control of the Minister of Transport, with an initial capitalization subsidy of \$725 million.

High-speed rail was a central part of the negotiations in the creation of this new national passenger rail corporation. Transport Canada identified “high speed service in areas of high population density over short to medium distances” as one of the few “suitable roles for passenger trains in Canada” (Transport Canada 1976b, p.6). The government’s intention – in line with the Turbotrain narrative – was to oversee the modernization of passenger rail services through VIA, all while continuing to bolster the domestic research and rail production industries (Ibid) and producing an outcome deemed fair to existing employees of the railways (Transport Canada 1978, p.5). Research by CP and CN was “carefully examined to find the best high-speed equipment for VIA” (Greenlaw 2007, p.62). Yet the focus on *equipment* overlooked (not incidentally) the necessity for dedicated tracks. It is for this reason that Greenlaw refers to the government’s talk of HSR development at the time as a form of “insincere flirtation”: “The railways lacked the significant financial support and commitment from all levels of government to effect the changes necessary for a bona fide high-speed service, including the removal of all level crossings, straightening of the right-of-way, proprietary trackage for passenger services, and perhaps even electrification” (Greenlaw 2007, p.68).

One of the new HST equipment options examined at the time was the Light, Rapid, Comfortable (LRC) train concept developed by MLW in conjunction with Alcan Canada and Dominion Foundries and Steel (Dofasco). This partnership between the

Montréal-based transport vehicle manufacturer and aluminum producer, and the Hamilton-based steel producer was a perfectly suited triumvirate in the eyes of the nationalist Trudeau government to ensure that technological development and industrial production (along with jobs) remained in Canada. For this reason it mandated that CN and VIA purchase locomotive vehicles from Canadian manufacturers such as MLW (even though the latter was a subsidiary of an American company).^{*} The Department of Industry, Trade and Commerce further covered 50% of the cost of developing the early LRC prototypes (Lukasiewicz 1976, p.155).

In 1975 MLW was acquired by Bombardier, which oversaw the continued production of the LRC trains. The deal was made possible thanks to handsome funding from the Québec government through the state run Société Générale de Financement (SGF), an “investment agency entrusted with a large pool of capital to encourage the development of francophone businesses” (MacDonald 2013, p.63). The spring of 1976 marked somewhat of a technological contest between the Turbos and the LRCs, as officials considered which technology ought to be favoured by a new Crown corporation focusing on passenger rail. Both technologies broke land speed records in tests within the QWC that spring – with the LRC reaching 208km/h and a refurbished Turbo reaching 226 km/h. While for the remainder of the decade the Turbos continued to serve as the new Crown corporation’s flagship train, the LRCs were nevertheless chosen as a

^{*} At the time of writing (summer, 2014), Dofasco is a subsidiary of the Indian multinational ArcelorMittal, Alcan has been bought out by the Australian/European giant Rio Tinto, and MLW has been purchased by the global transport giant Bombardier. Coordination between these corporations today would be a multinational project, and nationalist policies to keep production, technology and jobs in Canada would be pejoratively referred to as ‘protectionism’.

successor. As Greenlaw explains, “the LRC program was favored as the program of choice for VIA based on its strong ties to the national research and development industry” (2007, p.69). Here again the federal government’s strategic aim to bolster the domestic manufacturing sector was revealed – it had in fact contributed significant capital (\$3.7 million) for the LRC’s original development program to support what it saw as a promising export prospect (Macdonald 2013, p.116).

In 1981, as political economic philosophies were drastically changing in the US and UK and as a global recession plagued governments around the world, the federal government announced funding cuts for VIA. This would be an early instance of the Zerotrain narrative’s success in becoming legitimized within policy-making circles. In November of that year, VIA responded to the cuts by reducing its services by 20% (Churcher 2014). Given that the maintenance costs for the Turbos had grown substantially, and that the fleet now seemed old and outdated compared to newer options, VIA managers decided to focus on new rolling stock produced by Bombardier – the LRC.* The latter trains were just narrowly capable of surpassing the benchmark HSR velocity, yet they faced the same constraints as the Turbos, lacking the dedicated track infrastructure required to sustain a genuine high-speed rail service. In this light the reduction of one fifth of VIA’s operating budget in 1981 was seen by critics as a major blow to prospects for genuine HSR and the ability of VIA to cater its operations to securing the public interest (Perl 2002, p.123). In a final report by the Task Force on Rail Passenger Service – an entity organized by the Progressive Conservative opposition at the

* The LRCs were still being used by VIA as of 2014.

time – a link was drawn between VIA’s service cuts and the social and ecological ills that were thereby being produced through the consequent expansion of automobile and airplane traffic: “The government’s current policy of increasing the level of subsidization for other modes of transportation while decreasing the support for rail passenger service is extremely short-sighted and totally out of tune with Canadian transportation needs and concerns regarding energy conservation, urban sprawl, pollution and safety” (Task Force on Rail Passenger Service 1981, p.23).^{*} Nevertheless, this early manifestation of what would eventually become the Ecotrain narrative failed to garner the political legitimacy required to affect the nation’s rail policy. In the QWC the Period of Emergence would end with the Turbotrain narrative increasingly on the fringes as a Zerotrain mentality was sweeping through Ottawa.

Alberta’s Mirrored Experience with High-Speed Rail

The story of the HSR development in the CEC was shaped by many of the same forces seen in the QWC – the growth of automobile and air travel, the formation of VIA Rail, and the freight companies wanting to purge unprofitable passenger services. Yet the outcomes were more pronounced in Alberta: Whereas in the QWC the decline of passenger rail travel was met by efforts to modernize the mode, in the Western Corridor passenger rail declined to the point where authorities decided to cancel it altogether. While the LRCs eventually replaced the Turbos in the QWC in 1982, marking the turn of

^{*} The Task Force’s final report would come back to haunt the Conservative Party during the Mulroney years, when the latter government would also make significant cuts to VIA.

an era in Canada's HSR story, in the CEC the LRCs failed to capture the attention of intercity travelers after initial testing.

For the first half of the Twentieth Century passenger rail service between Calgary and Edmonton was stable, with three different corridor routes connecting the two cities by the mid 1950s. Yet during subsequent decades “increased competition from airlines, new roadways, [and] the new affordability of personal vehicles and cheap fuel” eroded the passenger rail market (Forth Junction Project 2011). The vicious cycle of defunding, station closings, poorer quality service, and declining ridership and revenues was catalyzed by the construction of Highway 2 (completed in the early 1960s). CP's downtown station in Edmonton was closed in 1971, which meant travelers to that city would have to find a way to cross the North Saskatchewan River on their own to reach the city core. The same federal Railway Transport Committee review process of the late 1970s which resulted in the creation of VIA took on a highly interventionist program to revive rail in the CEC as well, beginning in 1981 with VIA's incorporation of the Edmonton-Calgary ‘Dayliner’ service, subsidized to a one-way fare of \$27. The program was successful in its early years, resulting in a short-lived revival of passenger rail use not seen since the late 1960s. At the same time, elements within the provincial government were beginning to consider the idea of HSR. In 1976 NDP leader Grant Notley launched an initial query into the idea, and in 1980 an assistant deputy minister at Alberta Transportation, Brian Sullivan, further proposed the idea to Premier Lougheed (Davis 2008).

However, the same forces influencing the QWC would find their way into Alberta's busiest transport corridor. As Davis has written, “despite the Lougheed

government's enthusiasm about high-speed rail, a global and provincial economic downturn conspired against it" (Davis 2008). As noted above, by the early 1980s, the emergence of *laissez-faire* Keynesianism led the federal government to interpret a major passenger rail infrastructure project as an unwarranted market intervention – and a costly one at that; and in 1981 the very government which had ‘saved’ passenger rail in Canada by creating VIA would then impose a 20% cut on the latter’s budget – resulting in the loss of 400 employees (VIA Rail 2014c). For this reason, VIA opted to stick with what was then its status quo ‘Business Plan’ in the CEC in the early 1980s – conventional rail service on shared track. According to the historical take by the Forth Junction Project, the ensuing erosion of consumer confidence after numerous “grade crossing collisions and railway errors” as well as “poor integration with other transport modes” (2011) was the final death knell for conventional passenger rail in Alberta. By 1982, passenger rail was entering its final years of existence in the CEC (service was phased out in 1985).

Conclusions

In an early promotional video of the Turbos prepared for CN (Langstroth & Main 1970) transport planners dreaming of the future would portray the QWC as becoming increasingly urbanized over the ensuing decades, such that the expanses between large cities like Toronto and Montreal would eventually become mega-cities in themselves. In this imagined context the Turbos were seen as a step forward in providing service for a modern, highly urbanized and highly mobile population, though it was widely understood that the diesel-fueled turbine-powered trains were not the “final solution” (Langstroth & Main 1970). Rather, it was believed new track infrastructure combined with continued research would facilitate the development of more efficient rail technology. Yet such

developments as called for by TurboTrain proponents never occurred due to two crucial missing pieces of the puzzle – the lack of dedicated tracks and the existence of a national passenger rail operator without any real power to decide its own fate; one beholden to a “stop-go cycle of increased expenditures followed by cutbacks” (Perl 2002, p.123).

Nevertheless, as the preceding pages illustrate, despite its legacy of failed attempts to introduce HSR, Canada has in fact a robust record of development of HSR technology dating back to the 1960s and 70s. At that time the country was poised to become a global leader in HSR development, as Canadian firms experimented with bullet train technology. As David Jeanes of Transport Action Canada has testified to a parliamentary committee, “we were positioned in the 1960s with some of the best technology, manufacturing, [and] research at the National Research Council, and speed records to lead the world in high-speed rail” (Standing Committee on Transport, Infrastructure and Communities 2009). While these factors never manifested in the implementation of HSR within regular passenger service, there were efforts that came very close, particularly within the QWC. The overall character of the ensuing years (at least up until the mid 1980s) thus involved the ‘emergence’ of Canadian HSR development. It was during this period that considerable efforts were made to bring the trains to life, aided (in theory) by the prevailing political economic structure at the time, which was characterized by more interventionist Keynesian principles. In this period the state funded and sponsored research and development into HSR, and through its affiliated Crown agencies took the requisite steps towards genuine HSR service development. VIA’s very origins were tied up in the imagination of new bullet trains in both the QWC and the CEC. Despite the overall trend of emergence, HSR did not succeed in

overcoming its challenges, in part because this period was equally one of political economic transition, as Canadian variants of Keynesianism were transforming into their more *laissez-faire* forms, particularly within the transport sector (which was increasingly oriented along competitive market principles following the NTA of 1967). While the process of ‘neoliberalization’ had begun at a global level, the domestic transition to neoliberalism would coincide with a new period in Canada’s HSR development.

CHAPTER SIX

Impasse (1983 – 1998)

“In this climate of budgetary restraint, it seems unlikely that the federal government would make a major investment in HSR.”

- W.J Hurley, J. Jones and A.R Eastham (Hurley et al. 1989).

“These projects very rarely – if ever – happen without government involvement anywhere around the world. So if the government has a completely hands off approach, projects... remain at the conceptual stage.”

- Bombardier Transportation (2013).

“The market triumphalism that has spread across the advanced capitalist countries since the early 1980s has found, after some delay, a secure presence in Canada’s state institutions. Governments of varied political complexion, at both the national and sub-national levels, have either boldly trumpeted or quietly embraced neoliberalism.”

- Robert MacDermid and Gregory Albo (2001, p.163).

Introduction

This chapter makes the case that the fifteen-year period from 1983 to 1998 was largely one of political impasse for Canadian HSR development as the Zerotrain narrative became overwhelmingly dominant in decision-making circles. While there were nevertheless some project proposals made to decision-makers during this time from a nascent Ecotrain perspective, and while the idea of HSR continued to be examined in commercial feasibility studies, the repeated political conclusion reached in both the CEC and the QWC was that there was simply insufficient demand to make the investments worth the significant expense. The chapter additionally argues that this impasse can be contextualized by the prevailing political economies at the time in Ontario, Québec, Alberta, and within the federal government, all of which tended to feature ‘roll-back’ neoliberal perspectives on the state’s regulatory role within the economy. The transition

from Keynesianism (with Canadian characteristics) to roll-back neoliberalism during this period helped create the conditions in which public financing of HSR projects came to be seen as politically undesirable – not solely because it was considered an ‘unfair intervention’ in transport market competitiveness (as it came to be seen towards the end of the Period of Emergence), but additionally because, according to the prevailing political economic ‘rules’, the state was ‘supposed’ to be retracting its involvement within the economy, and services were ‘supposed’ to be provided by the private sector. As noted below, rhetoric about ensuring a ‘level playing field’ would be used increasingly during this period to justify a policy of non-intervention in the transport sector and decreasing subsidies for rail in particular, a rather ironic claim given the complete dependence of the automobile and air modes on state-financed infrastructure. Further, the growing commitment to cost-benefit analysis (CBA) as a mode of political decision-making during this period (see Government of Canada & Treasury Board of Canada Secretariat 1995) further refocused attention on the financial viability of HSR projects. In this sense Zerotrain entrenched itself as the leading narrative of HSR development during the Period of Impasse, while the Turbotrain vision was becoming a legacy of the past and the Ecotrain narrative was continuing to form and gain legitimacy. To a certain degree this transformation reflected global trends in HSR development, as examined in the following pages.

Global HSR Development in the Late 20th Century: An Uneven Experience

While the period from 1983 to 1998 saw additions to global HSR capacity, the years nevertheless stand out as a slower period of development relative to the 1960s and 1970s. In part, the character of global HSR development became increasingly uneven during this

period, as some industrialized nations (such as the UK, US and Japan) underwent major political economic transitions in which the state significantly rolled-back its role within the transport sector (to the detriment of HSR development efforts), and others (such as France and Spain) continued to feature more active and interventionist governments. One outcome of uneven political economic restructuring at the time was thus the slowdown of HSR development; another was the diversification of HSR development trajectories and business models.

In addition to opening up telecommunications and banking sectors, nations taking on neoliberalization in the 1980s and 90s largely privatized and deregulated their transport systems (see discussion of global neoliberalization below), with major repercussions for how HSR development would thereafter take place. In part the privatization push was a response to the mounting debts accumulated during the Keynesian period, as it was believed that selling off state assets would both inject the state with short-term capital and absolve it of future funding responsibilities. In Great Britain, state involvement in the transport sector was scaled back by Thatcher and subsequent governments (Bunting 2004, p.5), eventually resulting in the privatization of both the intercity bus and rail systems. In the United States, although government-owned Amtrak continued to receive a modest subsidy to operate passenger rail services, it also faced pressures to operate more efficiently, as if it were a financially self-sufficient private corporation – a largely impossible task given its mandate to provide long distance

intercity services (Moore 1997).^{*} Meanwhile, in Japan, JNR was privatized and split into 7 distinct enterprises in 1987, which together made up the Japan Railways Group (or JR Group). Throughout much of Europe and Southeast Asia this was a period of considerable privatization (or commercialization) of state-run transport services – railways in particular. On the whole, this period coincided with changes in the willingness of governments to directly involve themselves in HSR operations. The abandonment of the APT project in Britain in 1985 was symptomatic of the changing times: “Due to numerous technical problems, and both a lack of funding and the necessary political support, the APT project ended prematurely ... so that the APT never went into series production” (Estler 2013, p.32). Thus, despite maintaining two domestic ‘HSR’ projects during the 1970s (the APT and the Intercity 125), Great Britain failed to add a single kilometer of genuine HSR capacity during this period.

Nevertheless, some nations were successful in funding and building HSR by continuing to appeal to a Keynesian mentality. An example is found in Spain, which continued to employ the power of the state in the late 1980s to initiate its own HSR program. It was not until 1986 that Spain turned its attention to HSR after choosing this option over upgrades to existing rail infrastructure. Of course, the country was coloured by its distinct political economic history, having faced decades of fascist and nationalist rule under the dictatorship of Francisco Franco (between 1936-1975), as well as a 14-year period thereafter during which a socialist government held power (between 1982 and

^{*} Amtrak had been formed in 1971 as a publicly funded railway service under the government of President Richard Nixon in an attempt to save passenger rail from its seeming impending collapse in the United States (Luberoff 1996).

1996) while much of the rest of Europe was transitioning towards neoliberalism. The Spanish government was motivated to jump on the HSR bandwagon in the late 1980s for a number of reasons – its recent joining of the European Union (which offered a source of additional financing for HSR), the desire to stimulate the economy of the poorer Andalusia region, the desire to “set the railway on an equal footing with road and air transport” (Gómez-Mendoza 1993, p.49), and the push to have a state-of-the-art high-speed train in operation by the time of the 1992 World Expo, hosted in Seville. In typical Keynesian fashion, “the government also saw the rail expansion project as a means to strengthen Spain’s own industry” (Estler 2013, p.78). Finally, the Spanish National Railway Company (RENFE) opened its first line in 1992, connecting Madrid and Seville. RENFE had always enjoyed close integration with state policy – both during Fascist times and the socialist period thereafter. For instance, in the 1950s the Franco regime stepped in to help RENFE compete with growing automobile traffic by limiting the number of road operator’s licenses on routes where there were competing train lines (Gómez-Mendoza 1993). Government support for RENFE continued after the democratization of the state in the mid 1970s. Through its implementation of a number of subsequent AVE (Alta Velocidad Española, or Spanish High Speed) lines in the 1990s, both RENFE and the Spanish government together pursued a longstanding “philosophy of promoting welfare and wealth through expansion of the railway network” (Ibid, p. 54).

One irony in the Spanish model, however, was the lack of compatibility between its high-speed rail infrastructure and that in neighbouring France due to maintaining different railway gauges. Over the years the various generations of AVE trains featured different designs from different manufacturers – which included Alstom, Siemens, Talgo-

Bombardier, and Construcciones y Auxiliar de Ferrocarriles ('Railway Builders', or CAF). This was a time when European economies were decentralizing, outsourcing, and turning to private contractors, switching from the 'full vertical integration' model typical of the Keynesian period to that of a 'full separation' model in which HSR infrastructure is separately managed by different entities. The outcome in Spain was a patchwork quilt of HSR-types that, ironically, made trans-border European integration of passenger rail services difficult (when it was, ironically, the force of economic integration which facilitated the contracting of foreign firms to produce RENFE's variety of trains in the first place; Gómez-Mendoza 1993).

In contrast, the German case demonstrated a distinct model of indirect governmental guidance in HSR development as a means of fostering new technologies for export. Deutsche Bundesbahn (the West German Railways) initiated a program in the late 1960s to plan out a series of new HSR lines as well as upgrades to a number of existing conventional lines to higher speed rail (Aberle 1993). This was a long project in the making; while construction on the first of the new lines, between Hannover and Würzburg (327km long), began in 1973, the line did not open commercially until 1991. Concurrent research on electric traction HSR began in the mid 1980s, guided by the Federal Railroad central offices (Bundesbahn-Zentralämter) (Estler 2013). This culminated in the design of prototypes for the InterCity Express (ICE) and finally the operation of regular HSR service with the ICE in 1991. Although Germany's HSR development program began early, results were partly delayed by the fracturing of the nation during the Cold War. After reunification the Western and Eastern state railways were brought together under Deutsche Bahn (DB), which operated as a private company

whose majority shareholder was nevertheless the German government. This majority-government shareholding facilitated the expansion of ICE into a world-class HSR network as well as the planning of the world's first Maglev train between Hamburg and Berlin (under the project name Transrapid). While exceptionally expensive, the Transrapid project was closely considered by the German government as a means of later exporting the technological knowhow abroad (Aberle 1993).

As Table 6A demonstrates, the German and Spanish governments, along with the French, were responsible for the vast majority of HSR development between the years 1983 and 1998 (cumulatively responsible for building 85% of the world's added capacity during these years). Whereas in the former period (1964-1982) Japan had served as the leading HSR nation (responsible for building 76% of the world's new HSR capacity), in this subsequent period it was a minimal contributor. This is not altogether surprising given the political economic shift in Japan in the 1980s (which saw the privatization of the railways). It would take some time before new Public-Private Partnerships (PPPs) were successfully deployed as legitimate models for HSR development in Japan and other industrialized nations (see Chapter Seven). Meanwhile, France was the predominant contributor with new lines introduced connecting Paris to Le Mans, Calais, the Belgian border, and Valence (Gourvish 2010). As discussed below, these developments in global HSR development would in part be reflected in Canada.

**Table 6A: High-Speed Rail Development During the Period of Impasse
(KMs of operational track)**

Period	Japan	France	Italy	Germany	Spain	Other*	Total
1983-98	148 (7%)	862 (37%)	110 (5%)	636 (28%)	471 (20%)	72 (3%)	2299

Data Source: Gourvish (2010); International Union of Railways (2013b).

Although publicly-owned VIA would continue to be seen by some as the most logical manager and provider of HSR, a new conceptual space had been created wherein a private consortium could conceivably serve as the builder and operator of HSR infrastructure and services, while the state served as the main financial backer, regulator, and theoretically, one of the long-term benefactors too (as a result of increased tax revenues and economic benefits). Both of these conceived models, however, would require a tremendous amount of upfront capital expenditures from the state – a notion that became increasingly inconceivable during these years.

Roll-back Neoliberalism Abroad and the Rise of ‘Sustainable Development’

The uneven progression of HSR development characterized above was conditioned by uneven global political economic shifts at the time, as well as the manifestation of new forms of socio-natural governance. As discussed in Chapter Five, a global transition towards neoliberalism had already begun in the 1970s. Transformation took place through both coercive means (in Chile and China, for instance) and democratic means (such as in the US and UK). With the latter two nations playing an influential role in the global economy, ‘Reaganomics’ and ‘Thatcherism’ became particularly influential in

* Belgium was the 6th nation to join the global HSR club, with its 72km SNCP line linking up Brussels to the French border.

initiating a much broader neoliberal transition throughout the so-called developing world as well. As Peck (2010) notes, the adoption of monetarism and high interest rates in the US and UK not only affected their domestic economies, but it also...

“directly contributed to the global debt crisis that followed [in the 1980s], delivering developing nations around the world into the hands of the structural adjusters in the multilateral banks. ‘Policy-based lending’ would add external impetus to a series of subsequent, often violent neoliberal transitions, especially across Latin America, as more and more economies were folded painfully into the common matrix of neoliberalization. And next came the fall of the Berlin Wall, and the redesignation of Russia and Eastern Europe as transition economies- another new space of experimentation in neoliberal shock treatment” (Peck 2010, p.21).

After the US and the UK transitioned it would therefore only be a matter of time before neoliberalism would be internationalized, primarily by infiltrating the ‘Global South’ and the emerging Eastern Bloc economies. Former and existing British colonies and nations under American influence throughout Africa, Asia and Latin America would face additional pressures from the neoliberal International Financial Institutions (IFIs) (including the World Bank, the International Monetary Fund and the World Trade Organization) or even global institutions serving American or British imperial interests (such as the North Atlantic Treaty Organization or the United Nations Security Council). As explained earlier, Canada had partly avoided this trend up until the early 1980s, with a predominantly Keynesian government (led by the Trudeau Liberals) remaining in power. Nevertheless, given its close ties with the US economy (if not its total ‘dependence’ upon the latter), neoliberal fissures were beginning to crack Canada’s Keynesian walls.

To be sure, global neoliberalization was an uneven process. As explained in Chapter Two, expressions of neoliberalism were differentiated by space and time, coloured by various cultural and historical factors in each place where the process took

root. Generally speaking, however, the preliminary round of neoliberalization was one of rolling-back the previously statist forms of governance, a process “preoccupied with the active *destruction and discreditation* of Keynesian-welfarist and social-collectivist institutions” (Peck & Tickell 2002, p.384; emphasis in original). This early moment in neoliberalization was thus usually characterized by hard-line monetarism, cuts to public expenditures, reductions in personal and corporate taxes, the removal of ‘red tape’ regulations (or other barriers to capital), and widespread privatization (Peck & Tickell 2007, p.34). These policy adjustments provided alternative responses to many of the same social and economic ills and issues targeted by Keynesian-welfarist regimes (economic recession, unemployment, inflation, quality of life, health and other social services, etc.) – however they did so in ways that facilitated (as opposed to moderated) the process of capital accumulation.

The neoliberal response to *environmental* problems is thus worthy of note. Whereas during the Keynesian period the predominant environmental critique was steeped in notions of the finitude of Earth’s natural capital, or a discourse of ‘limits to growth’ (see Meadows et al. 1972) – a problem which implicitly called for regulatory ‘management’ of natural resource production and consumption – the subsequent removal of the state from the economic sphere at the hands of neoliberalization required a new environmental discourse which would allow markets to operate without regulatory oversight (Pearce & Warford 1993). The discourse of ‘sustainable development’ filled this void (Dryzek 2013, p.147; see also Keil 2007).

As Castro (2004) elaborates, the mainstreaming of sustainability* was a response to the idea of limits to capitalist growth: Sustainable development “did not grow out of the environmental movement... Rather, it was a product of the mainstream reaction against the radicalism of the environmental movement, which was not only proposing limits to growth but also emphasizing regulation as a means of stopping ecological degradation” (Castro 2004, p.196). The idea of sustainable development was popularized through the World Commission on Environment and Development (or the ‘Brundtland Report’) in 1987, but it was significantly mainstreamed after the 1992 United Nations ‘Earth Summit’. It was at this summit held in Rio de Janeiro, Castro argues, that a connection between neoliberalism and sustainable development was forged: “Chaired by the millionaire Canadian businessman Maurice Strong, the summit counted on the participation of most of the nation-states on earth, the majority of which were governed by elites committed to the neoliberal agenda” (Castro 2004, p.197). The report coming out of the Rio Earth Summit (United Nations Conference on Environment and Development 1992) noted that sustainability could in part be achieved through “trade liberalization” (sec. 2.3), as well as the “positive contribution of business and industry, including transnational corporations” adhering to “free market mechanisms” and “taking voluntary initiatives, promoting and implementing self-regulations” (sec. 30.3).

* Differentiated here, as in Chapter Two, from ‘socio-ecological sustainability’ (Swyngedouw 2007) by its post-political and ahistorical nature.

This bond between the mainstream modern environmentalist discourse of sustainability and neoliberalism would continue to strengthen throughout the roll-back and subsequently roll-out phases of neoliberalization. As McCarthy and Prudham note:

“‘Free-market’ environmentalism, once an oxymoron, has proliferated since the Reagan-Thatcher years, in forms such as tradable emission permits, transferable fishing quotas, user fees for public goods, and aspects of utility privatization. Meanwhile, neoliberal ventures have increasingly assimilated environmentalism through key discursive shifts, such as the growing convergence of sustainable development with green capitalism, the purported ‘greening’ of the World Bank (Goldman 2001), and a vast tide of corporate green-wash” (2004, p.279).

Like the neoliberal mantra with which it was increasingly intertwined, sustainable development was also variegated in its different forms. For roll-back neoliberals, sustainability was interpreted through ‘Promethean’ (Dryzek 2013) beliefs in the inherent capacities of free markets to signal environmental problems to society (in particular the scarcity of natural resources), thus naturally prompting environmentally-sound behaviour through the unfettered dynamics of supply and demand. Such market signals, in a growth-oriented capitalist system, also create an impetus for entrepreneurial development of new technologies that either reduce environmental footprints or help tackle environmental problems. A similar belief, though slightly nuanced, was shared by roll-out neoliberals (discussed in more detail in Chapter Seven). To accomplish sustainable development, the latter theory went, nations needed to undergo a process of ‘ecological modernization’ (EM). There was nothing inherently unsustainable about capitalism; rather, what was needed was a retooling of capitalist markets so that they would be more environmentally friendly. The key point was that there was money to be made in more efficient environmental behaviour (Ibid, p. 145). The key difference between the Promethean and EM approaches to neoliberal sustainable development was that the latter

required a slightly more active state. Within EM, argues Dryzek “there is a role for government in setting standards and providing incentives to industry, which helps explain why ecological modernization has flourished in countries with interventionist governments that work closely with business” (Dryzek 2013, p.172). In sum, the restructuring that swept across the world in the 1980s and 90s was fundamentally influenced by mainstream understandings of sustainable development, such that by the turn of the Century “neoliberalism and modern environmentalism [had] together emerged as the most serious political and ideological foundations of post-Fordist social regulation” (McCarthy & Prudham 2004, p.275).

Roll-back Neoliberalism Comes to Canada

As MacDermid and Albo have argued (2001), the neoliberal turn in Canada’s federal and provincial governments arrived late relative to most advanced capitalist countries. To be sure, it was a fractured and muddy process – there would continue to be remnants of the welfare state within the neoliberal period, and similarly (as examined earlier in Chapter Five) there had already been instances of *laissez-faire* policies introduced within certain Canadian economic sectors during the Keynesian period. As Peck and Tickell explain, such ‘muddiness’ is to be expected: “Neoliberal impulses and imperatives have become increasingly widespread and, in many contexts, normalized. But everywhere they are enmeshed, blended, and imbricated with other forms of governance” (Peck & Tickell 2007, p.31). Nevertheless, a tangible political economic shift marking a switch from what was a predominantly Keynesian political economy to a predominantly neoliberal one is identifiable in Canada beginning in the mid-1980s.

The transition began at a federal level, highlighted by the stark contrast between the policies pursued by Progressive Conservative (PC) Prime Minister Brian Mulroney (in power from 1984 to 1993) on one hand, and the clearly Keynesian impulses of former prime ministers. Mulroney's term oversaw the signing of both the Canada-US Free Trade Agreement in 1988 and the North American Free Trade Agreement (NAFTA) in 1992, as well as the privatizations of Air Canada in 1988 and Petro Canada in 1991. The PCs also initiated a privatization process for Canadian National and the deregulation of the telecommunications industry – reforms which were finalized by the subsequent Liberal government of Jean Chrétien (in office from 1993-2003).

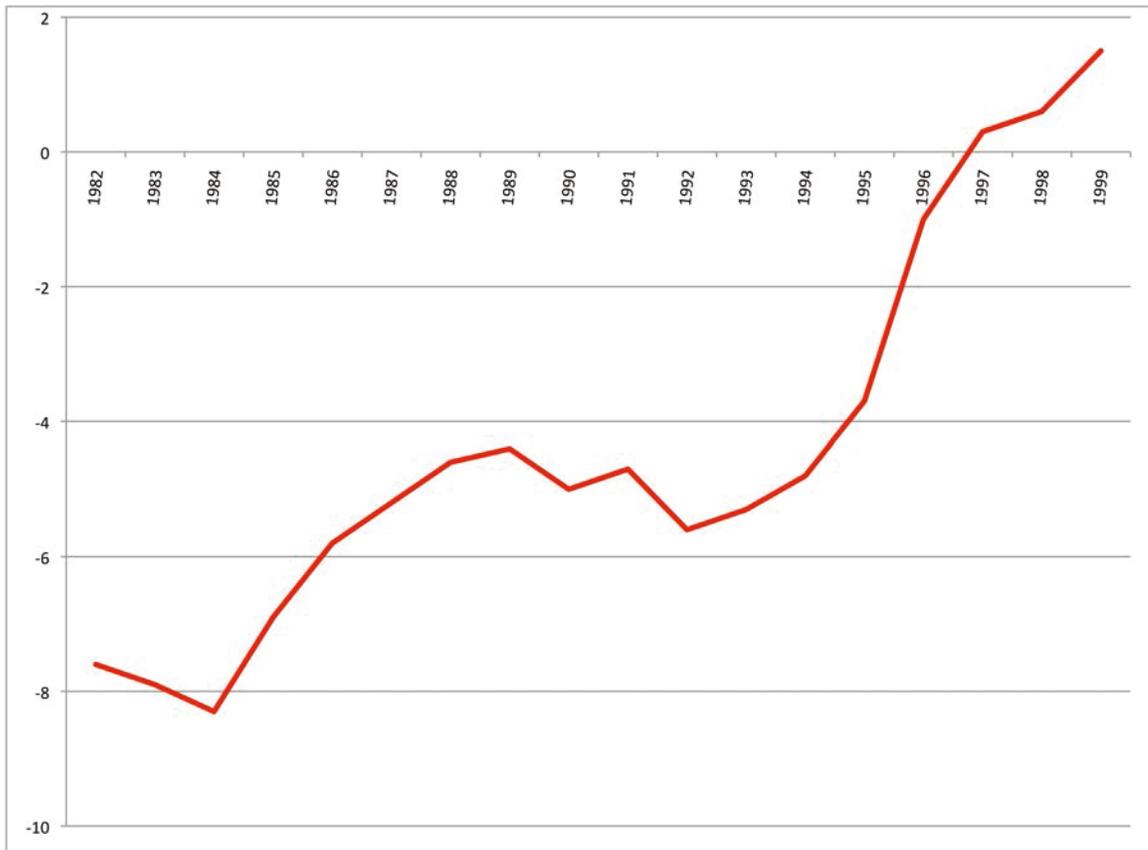
One window into the neoliberal transition can be found in the energy sector. The contrast between Trudeau's National Energy Program (NEP) implemented in 1980 and the subsequent neoliberal approach to the sector – expressed within Mulroney's Canada Petroleum Resources Act (CPRA) of 1985 is telling. The focus of the NEP was to reduce foreign influence over the domestic energy industry and disassociate the nation's energy needs from unstable global energy market trends. Trudeau had instituted a federally-mandated “petroleum pricing and revenue-sharing regime that recognized the requirement of fairness to all Canadians no matter where they lived” (Chastko 2004, p.180). Within this Keynesian context, there was close provincial and federal oversight over energy companies and energy infrastructure projects, and the governments acquired a considerable portion of the profits. Under the NEP, for instance, oil companies in Alberta were required to use domestic extraction technologies, procure equipment domestically and hire Canadian management personnel. In contrast, the 1985 CPRA was intended to reverse the NEP's push towards market controls and domestic favouritism.

Tellingly, Mulroney purportedly claimed that “Canada is open for business again” in a talk to energy investors during one of his first trips the United States as Prime Minister (Chastko 2004, p.200). In addition, Mulroney introduced Investment Canada, an agency with the aim of soliciting foreign direct investment within the domestic economy. These actions initiated the neoliberal turn at a federal level by thoroughly uprooting Trudeau’s nationalist approach to the extraction, production and distribution of the country’s resources.

Another telling indicator of a political economic shift initiated by the Mulroney regime, and taken up wholeheartedly by Chrétien, is the initiation of a trend in reducing Canada’s federal government expenditures (relative to both revenues and to GDP). To be sure, the Mulroney government continued to spend large sums in *net* terms – producing deficit budgets in all nine years he was in office to the tune of between \$29 and \$39 billion (CBC News 2014c).^{*} While Chrétien faced a \$53.8 billion deficit (adjusted for inflation to \$2011) in his first year of office, in each of the following 5 years the net expenditures declined to the point of reaching a surplus of \$7.6 billion (\$2011; Ibid.). In short, the Canadian government was becoming more cautious about its expenditures relative to revenues and overall growth (see Figure 6A).

^{*} Accounting for inflation (\$2011) the range is more accurately between \$46 and \$73 billion in deficit spending.

Figure 6A: Federal Annual Surplus/Deficit as a Percentage of GDP, 1983-1998*



Data Source: CBC News Interactive (CBC News 2014c).

Neoliberalization (and Lasting Keynesianism) in the Provinces

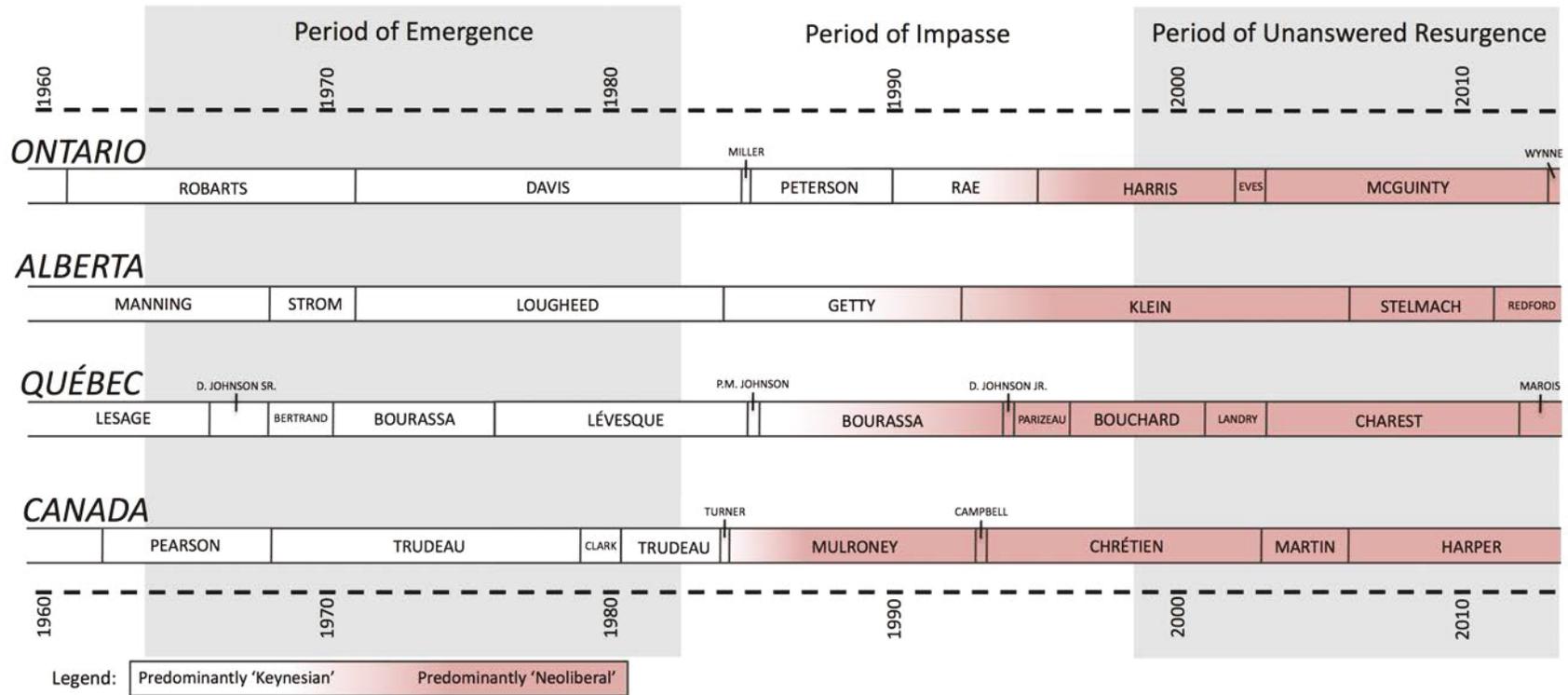
An additional ‘muddying’ force in Canada’s neoliberal transition involves the different temporal expressions of neoliberalization in various provincial jurisdictions and that of the federal government. As Figure 6B demonstrates, the process began at a federal level before it did in the provinces, and further each province underwent its own transition.

In all three of the provinces examined here, neoliberal governments were preceded by characteristically Keynesian regimes (discussed in Chapter Five). Québec

* Negative values represent deficits, while positive values represent surpluses.

was among the first to take steps towards neoliberalization in the late 1980s, this despite having a Premier – Robert Bourassa – who had already served a term during the 1970s without undertaking such political economic reforms. The former Keynesian era in Quebec had been ushered in after the election of Liberal Jean Lesage in 1960. His government’s so-called ‘Quiet Revolution’ brought about a period of progressive social gains, including universal health care, affordable education and energy pricing, and high rates of unionization (Hébert 2013). During the subsequent two decades the governments of Robert Bourassa (whose first term in office spanned from 1970 to 1976) and René Lévesque (1976 to 1985) in particular would continue to uphold this progressive tune. Lévesque had been the minister responsible for the nationalization of hydro-electricity production (under Hydro-Québec) during the earlier Lesage regime. During his term as Premier he introduced legislation to limit corporate influence in the electoral process and held close ties to the labour movement. Although his time in office was mostly preoccupied with securing independence and sovereign rights for the province (Poliquin 2009), the combined effect of nationalist and Keynesian policies eventually led, as elsewhere, to high public debts, unemployment, and stagflation (Blad 2012).

Figure 6B: The Neoliberal Turn in Canada and Three Provinces



Credits: Figure produced by author.

It was in this context of high debts – along with the concurrent shift at the federal level – that Premier Bourassa turned towards neoliberal policies in his *second* term (1985-1994).

Gattinger and St. Pierre explain the context:

“The publication of the Scowen, Fortier, and Gobeil reports in 1986 signaled the first privatization and deregulation measures. It was also at this time that Québec lent its support to the free-trade agreements being discussed and to the Mulroney Conservative government’s negotiation of the Canada-United States Free Trade Agreement (FTA 1988) and then of the North American Free Trade Agreement (NAFTA, 1992)” (Gattinger & St. Pierre 2010, p.285).

While Québec thereafter showcased an aversion to state influence over the markets, its transition was nevertheless tied to a structural legacy in which statist intervention continued to find expression in many economic spaces. For this reason Gattinger and St. Pierre (2010) write of Québec has having a “quasi-neoliberal” political economy.

In Ontario, Mike Harris’ Conservatives came to power in 1995 and swiftly enacted a number of roll-back neoliberal reforms under the auspices of his ‘Common Sense’ revolution. Harris had come to power on the heels of Bob Rae’s NDP government, which had initiated the neoliberal turn in its final years* despite coming to power in 1990 on a largely Keynesian, pro-labour platform known as the “Agenda for People”, which included calls for the nationalization of auto insurance, progressive tax and social assistance reforms, and ‘right-to-strike’ legislation. The Ontario finance minister at the time famously announced in 1991 that between the options of “fighting the deficit or fighting the recession – we’re proud to be fighting the recession” – clearly distinguishing the provincial government from the prevailing trend at the federal level of that era

* As Albo (2004) writes, the theme of “punitive austerity” showcased during the Harris years “could find certain neoliberal origins in the Social Contract of Bob Rae’s NDP government”.

(Whitney 2011). However, the subsequent Harris government demonstrated a starkly different political economy, involving cuts to health care and education, the reduction of corporate and income taxes, reforms to social welfare programs in the name of efficiency (such as the Ontario Works or Ontario Disability Support Plan), the reduction of the provincial public service, and reforms to the municipalities legislation to centralize governance in urban areas (Abu-Jazar 2009).

The neoliberal turn in Alberta offers another example of the disassociation between party allegiances and political economic practices, since neoliberalization occurred long after the coming to power of the PCs, a party which continued to hold power through to (and beyond) the turn of the Century. While Ralph Klein's PC Party would become renowned for its neoliberal tendencies, the prior PC governments led by Peter Lougheed (1971-1985) and Don Getty (1985-1992) stand out in contrast as mostly Keynesian. Lougheed had increased royalties for oil companies and instituted regulatory measures to tame the province's impending resource boom. In addition, he spent heavily on health and public services. Subsequently, when the Getty government faced economic decline in the wake of the global downturn and declining energy prices (which stifled the province's energy sector development), it largely responded with the Keynesian formula of major public spending (Lisac 2004). However, the same pattern of accumulated debts seen elsewhere would set the stage for the coming to power of a charismatic leader ready to transform government.

Alberta's transition was additionally tied to its history as a Western outpost seeking to develop its wealth of natural resources by appealing to private capital and unrestricted markets (Steinhauer 2009). Klein came to power in 1993 and swiftly reined

in public spending. While spending on social programs had peaked during the Lougheed years, it had plummeted to its lowest levels by the end of Klein's first term, leading the leader of the opposition Liberals at the time to write that as a result of Klein's cuts, "people have paid with their jobs, their health, their public services, and in some cases with their lives [due to excessive funding cuts at hospitals]" (Taft 1997, p.2). In addition to fiscal cuts, Klein reduced taxes – income taxes, corporate taxes, and sales taxes (the province became the only one in Canada without a sales tax).

The macro-historical trend in Canada during this period is thus that characteristically Keynesian governments were followed by roll-back neoliberal governments at both the federal and provincial levels. This transition took place from the mid 1980s through mid 1990s, and was relatively disarticulated from party affiliations. It is equally important to recall the variation of expression *within* both Keynesianism and neoliberalism, as such variation helps to explain why various neoliberal governments have featured such drastically different policies and positions on projects such as high-speed rail.

The Neoliberal Turn and HSR in Canada

As had occurred internationally, roll-back neoliberalism brought about changes within Canada's transport sector. While the subsidization of Crown agencies had been targeted (at least in spirit) during the former Keynesian period in the wake of the 1967 NTA, during this subsequent period the role of the state in influencing the transport market would be further reduced (Wallace 2002, p.169). However, this reduction manifested in uneven ways; for passenger rail it was not until the late 1980s that the federal government dramatically cut its financial support. Even after the budget cuts of 1981 VIA had

continued to receive relatively high levels of financing (compared to 1990 levels). VIA's funding peaked in 1988 at \$636 million before beginning a precipitous decline.* As Perl explains, despite the anti-subsidy sentiments found in the NTA, "no government would have chosen to cut back passenger trains if public funds were available. And at this point in history [the mid 1980s], Canada's fiscal policy was not constrained" (Perl 2002, p.89);

The drastic reduction of funding for passenger rail seen throughout the 1990s was thus bolstered by roll-back neoliberalism, which brought with it a position that abhorred governmental funding of commercial transport, with more extreme versions of this narrative calling for the privatization of state-owned transport firms, or at the very least commercialization of firms such that they no longer became dependent on state financing. By 1998, the House of Commons Standing Committee on Transport would recommend in a report on the modernization of passenger rail that, for the purposes of guaranteeing competition in the sector, the government ought to ensure that "no undue hardship" be placed on any private competitor as a result of "passenger rail subsidies"; the idea being to ensure there was "a level playing field" across all transport modes while simultaneously drawing back the interventionist arm of the state (House of Commons Standing Committee on Transport 1998). This serves as an indication that the Zerotrains narrative was largely winning the battle for political legitimacy in the 1990s.

Due to this prevailing political economy, the period from 1983 to 1998 was largely one of impasse in efforts to bring HSR to Canada's two key corridors. The

* By 1998 *VIA's* federal funding had declined to \$178.4 million, and an annual cap of \$170 million in operating subsidies had been implemented.

dominance of the Zerotrain narrative, particularly within the political establishment, worked at blocking projects even when they were found to be commercially promising. In 1984, VIA produced a study (VIA Rail Canada 1984) considering the feasibility of implementing new electrified HSR infrastructures in both the QWC and CEC (it also considered other HSR technologies, including diesel-powered jet trains and Maglev trains).^{*} The study was at the time “one of the most comprehensive studies ever made of any aspect of the passenger railway system in Canada” (Ibid.). It consulted experts from Japan, France and Britain, and found that international exemplars demonstrated the “rich promise” of high-speed rail technology. Within the report, VIA president Pierre Franche claimed that “high-speed rail will be a key part of longer-range national plans for modernizing Canada’s passenger railway system” (VIA Rail Canada 1984, Foreword). The report found that the conditions were right for a new high-speed train (of 300km/h) between Toronto and Montréal (via Ottawa), and that such a train (operated by VIA) would cover all operating and maintenance costs through revenues, and further that all capital costs (covered by the federal government) would be repaid at a rate of 2.8 per cent (Ibid. p.8). At the same time, it noted that TGV-style electric HSR service could be introduced in the CEC at a cost of \$900 million (1983 dollars). However, the expected net present value for the Alberta project, after a 35 year project lifetime, was negative overall (VIA Rail Canada 1984). VIA’s portrayal of HSR at the time as a project of the *future* – despite the likelihood of cost recovery in the QWC – was symptomatic of its

^{*} This report was a response to a question that the Railway Transport Committee had posed to the new Crown corporation in 1979: “Is there a future, a potential, for high-speed passenger rail services in Canada?” (quoted in VIA Rail Canada 1984).

implicit understanding that the governments of the day were unlikely to invest nearly a billion dollars in any transport modernization scheme. The report was prepared in the final moments of the Trudeau regime, a government which had already demonstrated its desire for VIA to become more self-sufficient. As Perl notes, “Canada’s budget for developing new rail passenger technology was just a fraction of the capital investment that Japanese, French, and German governments had devoted to launching their high-speed rail renewal,” and Pierre Franche was quite aware of this fact (Perl 2002, p.126).

When Mulroney came to power in 1984 – seven months after VIA’s HSR study was published – the new government initially adopted a pro-rail stance. It called for the relaunch of some VIA lines abandoned in 1981, continued to fund the Crown corporation and even tabled legislation (Bill C-97) to give VIA legal standing as an independent agency. However, the government’s actions in the years thereafter marked a complete reversal in policy. As Perl writes, the Mulroney government had turned increasingly towards the markets as the primary arbiter of rail’s competitive worthiness: “Like much of Canadian economic policy following the government’s embrace of the US Free Trade Agreement... political choices were ostensibly now delegated to the marketplace” (2002, p.130). The government’s previous industrial policy of supporting nascent technologies was dramatically reduced within the National Transportation Act of 1987. As Gillen et al. suggest, the new NTA clearly illustrated the government’s new policy objective, which had shifted by then “from industry promotion to economic efficiency” (1989, p.286).

This shift inevitably influenced the state’s willingness to subsidize (or even continue owning) Crown corporations: By 1987 VIA’s annual subsidy was \$536 million and its operating revenues only covered a third of the company’s costs, an arrangement

the Mulroney government was no longer willing to tolerate (Bunting 2004, p.4). While national rail riderships had fluctuated between 20 and 25 million passengers between the mid-1950s and mid-1970s, by 1991 VIA Rail serviced just shy of 4 million passengers (Dupuis 2011). In contrast, domestic air travel in Canada spiked during this time, taking on passengers from the intercity rail and bus modes. As noted in above, the number of air passengers grew from just over 5 million in the early 1960s to nearly 50 million by the late 1980s (Tretheway 2013). Despite Air Canada's tendency of producing millions of dollars in annual profits throughout much of the 1980s, the federal government privatized it in 1988. By the late 1980s the federal government was spending in the area of \$1.3 billion per year on the air mode alone – not in the form of subsidies, but for capitalization, operation and other grants and contributions (Transport Canada 1988).

While the political establishment pointed to the concurrent decline in conventional passenger rail service levels and riderships as evidence that governments ought to *get out* of the business of unprofitable rail, proponents would argue that it was precisely this context that *required* the modernization (and capitalization) of Canada's railways. The impasse faced by HSR thus served to reshape how proponents would try to sell the idea at a discursive level: By modernizing, they claimed, the mode could become financially independent *and* help alleviate growing congestion within primary intercity road and air routes. This argument was showcased within VIA's 1989 review of passenger rail modernization (conducted at the behest of the federal Cabinet), which began – just like the previous study – by highlighting the commercial successes of the Japanese Shinkansen and French TGV. Within, VIA would argue that the ability of each of the latter lines to capture large shares of the existing air and automobile markets in

high volume corridors raised the possibility that in Canada too HSR “could be an important contributor to the provision of an economic and improved public transportation system” (VIA Rail Canada 1989, p.2). While sharing some of the Turbotrain narrative’s vision for how rail modernization ought to take place, this formulation departed somewhat from the Turbotrain vision in its construction of an economic rationale for HSR development. In the context of the predominant Zerotrain narrative, proponents of rail modernization knew that they had to appeal to the language of cost-benefit analysis and demonstrate the long-term profitability of proposed projects. And while the *ecological* argument was not yet a prominent force in the selling of HSR at the time, VIA’s 1989 report does make the case that passenger rail offered some benefits over the dominant air and automobile modes in terms of environmental and energy impacts, noting that the latter modes “are less fuel efficient and generate more pollution” (VIA Rail Canada 1989, p.110). In short, by the late 1980s a new discourse around rail modernization was emerging and forming. For instance, one of the few journal articles published at the time focusing on HSR development policy in Canada (Hurley et al. 1989) specifically sets out to make the case that HSR “makes financial and economic sense in Canada,” and that the mode in fact allows people to travel more cheaply (to governments) than air when the total costs of both modes are taken into account.

In proposing an HSR line in the QWC which would cost \$3 billion, VIA’s 1989 report was not particularly well received by the Mulroney government. The response of the federal government was to fire VIA President Dennis DeBelleval and initiate a series of successive cutbacks to the tune of hundreds of millions of dollars, forcing a total

restructuring of the Crown corporation in 1990. To this day VIA reflects on the 1990 budget cuts as a dark moment in Canadian passenger rail:

In its effort to reduce the national deficit, Ottawa slashes its funding to cover VIA's operating expenses practically in half from \$600 million to \$350 million. A total of 2,761 employees, or 38% of *VIA's* 7,300 person workforce, lose their jobs. In Québec only, 994 positions are eliminated... Ottawa also ordered VIA to reduce passenger service by 50% and announced that public funding for passenger trains would continue shrinking from \$230 million in 1993 to \$170 million in 1998 (VIA Rail 2014c).

The near bludgeoning of VIA clearly signaled the federal government's Zerotrain perspective. While various proponents of HSR – actors such as VIA itself, the Ontario Québec Rapid Train Task Force (OQRRTF), and the rail advocacy group Transport 2000 Canada* – continued to advocate a Turbotrain narrative calling for governments to invest in public rail as a tool to help tackle social problems faced by society, political actors at the federal level demonstrated a much different perspective, one which featured the underlying priority of scaling back the state's role in the sector and letting the markets determine how each mode would progress. As Perl adds, the subsequent Chrétien government merely continued Mulroney's approach to passenger rail funding: "The Liberal government, which came to power in 1993, did little to change many of the market-led economic policies put in place by the Conservatives, and no policy departure from VIA's cost-cutting efforts was initially entertained" (Perl 2002, p.132). If the idea of HSR had any hope of surviving in this context, it would have to appeal to a market-based

* Transport 2000 Canada (or T2000), had been founded in 1976 as a citizens' coalition in support of public transport – in particular passenger rail. After the year 2000 the organization changed its name to Transport Action Canada (Transport Action Canada 2013).

rhetoric of financial self-sufficiency maintained by long-term economic benefits and private sector profitability.

Ecotrain Rises: The Provinces and the Private Sector Consider HSR

With VIA's prospects to build HSR dashed by deficit-obsessed federal governments, the next impetus for high-speed rail would come from the provinces. In 1989, the Premiers of Ontario and Québec – at the time David Peterson (Liberal) and Robert Bourassa (Liberal), respectively – jointly established a Task Force to consider, yet again, the feasibility of implementing high-speed rail within the QWC: “The Premiers indicated they expected the Task Force to examine in depth the political, economic, financial and marketing pre-feasibility of a high speed passenger rail system” (Ontario/Québec Rapid Train Task Force 1991, p.1). Peterson had reportedly become personally enamored with the idea of HSR after travelling on the TGV in France (Perl 2002, p.178), while Bourassa (like his predecessors) was supportive of such a project since it would almost certainly involve Bombardier, and as such “much of the design work and construction of the rail cars would take place in the province [of Québec]” (McCarthy 1998). During formal public hearings held by the Task Force two corporate proposals were pitched for such an HST. Bombardier offered to build a “Canadian TGV” – a 300 km/h electric train that could connect Toronto and Montreal (through Ottawa) within 2 hours and 45 minutes. At the same time, Asea Brown Boveri – a multinational engineering firm formed by the amalgamation in 1988 of the Swedish Allmänna Svenska Elektriska Aktiebolaget (General Swedish Electric Company, or ASEA) and the Swiss electrical engineering and motor producer Brown, Boveri & Cie – proposed a 250 km/h train based on the Swedish X-2000 HST, which could cover the same trip in 3 hours. In considering these proposals

and others, the Task Force was essentially reviewing similar technological options studied by VIA half a decade earlier – a diesel or turbine train using existing railway rights-of-way of approximately 200km/h; a 300 km/h electric train on dedicated track; and a 400 km/h Maglev elevated guide way. It estimated the capital costs of these projects at \$2.6 billion, \$7.1 billion and \$11.5 billion, respectively (\$1990). And just like the former VIA study, the Task Force arrived at some similar conclusions: The operating revenues would be sufficient to cover operating costs, and while the return on initial investment was positive, it was nevertheless a minimal figure and would only be accrued after a long project lifetime. As a result, the report concluded that although a TGV-style electric HSR would be a viable commercial operation, the limited financial returns would be seen by the private sector as insufficient, and as such governments would have to assist in the investment in order for the project to come to fruition (Ontario/Québec Rapid Train Task Force 1991).

While the Task Force's final report was partly framed in the language of the Turbotrain narrative, it nevertheless contributed to the emerging Ecotrain narrative of HSR as well. Its focus on the potentialities of public sector rail investments to help tackle societal problems was largely Keynesian in scope and espoused the Turbotrain vision of development. For instance, the report noted how if investments in HSR were made at a time when there was "significant slack in the economy, for example during a major recession, the investment would be particularly invigorating [to the economy]" (Ontario/Québec Rapid Train Task Force 1991, p.17). Further, it highlighted how in Europe and Japan HSR had been "created to solve... the well known problems of airport delay and highway congestion at city approaches... and other problems, using

government initiative rather than private enterprise” (p.4). At the same time, the final report identified an emergent argument about the role HSR investment could play in sustainable development. Although it did not use this exact term, it referred to proponents who advocated HSR investment along the sustainability triumvirate of social, economic and environmental gains:

“In the Ontario/Quebec corridor, those that favour high speed rail passenger service claim that transportation problems, coupled with *growing public concern for the environment*, clearly favour a restoration of passenger rail service in a modern form. They further contend that on their own merits, high speed trains can create a modal shift in traffic, from the air and automobile modes, sufficient to pay for the costs of their installation, and that, if this is not entirely possible, then *the social, economic and environmental benefits* of the investment and the corresponding ‘consumer surplus’ can justify any shortfall in revenues” (Ontario/Québec Rapid Train Task Force 1991, pp.4–5; emphasis added).

However, neither this rhetoric of a broader range of indirect benefits (an early manifestation of the Ecotrain narrative), nor the Turbotrain language regarding the great potential of public enterprise, was very compelling to roll-back neoliberals in government. While the final recommendations of the Task Force appealed to the federal government to involve itself in HSR development, the most the latter was willing to contribute was a few million dollars towards an updated tripartite study.

The updated study (Transport Canada et al. 1995) yet again considered the same technological options as the OQRTTF, minus magnetic levitation, which was deemed too costly and unfeasible in a Canadian context. With the federal government now involved, the study included “more detailed analysis of economic impacts taking into account how such a project could be financed *without increasing the public debt*” (Transport Canada et al. 1995, p.i; emphasis added). This corollary was required if HSR was going to have any chance of being approved by regulators firmly beholden to the Zerotrain narrative. The

total capital costs for the full corridor this time were pegged at \$9.5 billion for the 200km/h option, and \$10.5 billion for the 300km/h system (1993\$). Again social, environmental and economic benefits were interpreted, particularly with the latter option, with HSR investment expected to “improve public safety and decrease air pollution” and yield a positive NPV of \$684 million (Transport Canada et al. 1995).

Despite positive findings within the final study, the federal government would employ a stalling tactic. Meanwhile, the provincial governments, by that point “facing hard choices in health and social program cutbacks that accompanied their respective budget deficits, ... pulled back from seeking involvement in federal policy responsibilities that carried price tags as large as rail passenger renewal” (Perl 2002, p.183). The final report therefore called for the federal government to indicate its willingness to entertain a private sector proposal, and for the private sector to make such a bid.

The Chrétien government did indeed follow up with its stated willingness to entertain private sector proposals, and the private sector would do its part to provide a response. A consortium was formed between SNC Lavalin, AGRA Monenco, Bombardier, GEC Alsthom, AXOR, and Ellis-Don, to put together a proposal. In 1998, the Lynx Consortium, as it had called itself, proposed a 320 km/h train line between Toronto and Québec City. The entire project would cost \$11.1 billion, but contribute \$9.3 billion to GDP within the construction phase alone, followed by an additional \$325 million in GDP *each year* during the operation and maintenance phase of the project. As Perl adds, “environmental, trade, and tourism benefits were also claimed” (Perl 2002, p.183). The project was proposed as a Public-Private Partnership, wherein the private

sector would willingly take on over 35% of the project risk – so long as governments agreed to allow the private sector to recoup its costs before collecting their own share. Nevertheless, within the political context of spending cuts and austere budgets, the project yet again failed to appeal to decision-makers. As a spokesperson for Bombardier recalls: “What was the social priority back [then]? It was repaying this huge debt. So here along comes this Lynx group, and everyone just gets sticker shock when they see the \$11 billion price tag... and they don’t look at the cash flow” (Bombardier Transportation 2013). As a result, the proposal was shelved along with its predecessors, and a decade would go by before calls for another tripartite study – eventually resulting in the EcoTrain report (2011), itself an update of the former 1995 Task Force study!

As the historic unraveling of the Lynx proposal demonstrates, two divergent philosophies of Canadian HSR development were increasingly butting heads in political fora in the final years of the 20th Century. On one hand an Ecotrain narrative had become established, wherein partly-private HSR development was presented as a commercial opportunity which would produce a host of economic and socio-ecological gains. On the other hand, a Zerotrain narrative had firmly taken root over the preceding 15 years within governing circles, wherein the idea of large-scale public transport investments simply were not seen as an acceptable policy option given concurrent economic priorities. This contest for legitimacy between Ecotrain and Zerotrain was showcased in the deliberations of the Standing Committee on Transport in 1998 when it reviewed the Lynx proposal. Politicians from the leading Liberal Party raised three central concerns with the \$7.5 billion contribution asked of government by Lynx (in addition to the primary concern that such an expense would negatively impact attempts to tackle the debt, noted above): First,

parliamentarians expressed discomfort with the idea that the government would be shouldering more than 60% of the project risk, worried about what this would mean if a project eventually fell through. In response, a spokesperson for Lynx noted that historically “all infrastructure projects generally, be they airports, roads, wharves, and so on, were always paid 100% by government. What we’re suggesting is at least a split of the responsibility, something like 63% to 37%, which is an improvement” (Standing Committee on Transport 1998). The unwillingness of government to shoulder any more than half of the project risk, despite a legacy of financing transport infrastructures more handsomely, was a sign of its Zerotrains perspective.

Second, the government was highly sensitive to the ‘market distortions’ it would be creating through a major investment in Lynx. As Joe Fontana, then a high-profile Liberal cabinet minister, stated in parliamentary hearings, “I want to know how you think the airlines are going to react to this, especially when we’ll be accused of subsidizing it. In some way, shape or form, the fact is that the government is going to be subsidizing one mode of transportation over another, when in fact it has been trying to get out of subsidization of ports, harbours, airports—you name it” (Standing Committee on Transport 1998). Zerotrains’s ‘level playing field’ argument was thus again used as an argument against investment in public infrastructure.

A third political concern with the Lynx proposal had to do with the consortium’s plans to seek financing “within Canada”, as opposed to seeking international investors (Ibid). Compared to the earlier Trudeau Liberals, which fought during the Keynesian period to *decrease* the amount of foreign capital investment in domestic infrastructure projects, the Chrétien Liberals had followed the Mulroney regime in its opposite

government line on foreign investment. On this point the two narratives were in agreement, with the Lynx Consortium open to the idea of any type of investment that would enable the project to go forward. Given these concerns, a proposal that had originally seemed so promising (and which had been solicited by the very government which later turned down the project) failed to even garner approval for the second phase of the project (a final costing study). While the Lynx plan “made headlines in 1998,” it “just as quickly sank to the bottom of Canada’s transportation policy agenda as no government, either federal or provincial, came forward to embrace it” (Perl 2002, p.185). The failure of the Lynx project, combined with the concurrent cuts to VIA’s operating subsidy in 1998, thus marked the culmination of an era in Canadian HSR development.

Conclusion

Internationally, the period from 1983 to 1988 was marked by uneven patterns of global HSR development: In nations where roll-back neoliberal policies were being enacted (in the UK and US for instance), HSR development efforts appeared to slow down or otherwise failed to manifest in genuine HSR systems. In contrast, nations with more interventionist governments – such as France, Spain and Germany – were the major contributors to the world’s growing HSR capacity. Roll-back neoliberalism would eventually find its way to Canada as well, first infiltrating the federal government led by Brian Mulroney in the mid 1980s, and subsequently the provincial governments of Ontario, Québec and Alberta by the end of that decade and into the early 1990s. This political economic backdrop, in turn, profoundly influenced HSR development in Canada. Despite repeated feasibility studies (by VIA and thereafter governmental task forces) and private sector proposals (by Bombardier, ASEA Brown-Boveri and the Lynx

Consortium), the repeated conclusion by decision-makers was that an investment of this magnitude was an illegitimate policy option given the consequent impacts it would have on the broader transport market and concurrent governmental efforts to tackle debts and reduce deficits. In this sense the *Zero*train narrative of HSR development had held politically dominant throughout the period, while corporate and other proponents of HSR were turning away from the logics of the *Turbo*train narrative and beginning to scope out a new *Eco*train narrative aiming to sell HSR based on its ability to be economically self-sufficient while also contributing social and environmental benefits.

CHAPTER SEVEN

Unanswered Resurgence (1999 – 2013)

“Interest in high-speed rail (HSR) is growing around the world, with the number of countries running such trains expected to grow from 14 in mid-2011 to 24 over the next few years.”

- Worldwatch Institute Report (Renner 2011).

“In these fiscal circumstances, a new [high-speed rail] project of this scope is not a priority for the federal government.”

- Spokesperson for Transport Canada (Transport Canada 2013).

“[Alberta] is a government that for the last 25 years has been in the thrall of what I would describe as market fundamentalism... and that ideology has become so deeply engrained in our political economy that it’s very difficult to get people talking about big projects like high-speed rail because by nature they require activist government policy.”

- Spokesperson, Alberta Federation of Labour (2013).

Introduction

As the previous chapter has argued, a Zerotrain mentality associated with roll-back neoliberalism became dominant within the political spaces influencing the CEC and QWC in the mid-1980s and lasting throughout the 1990s, making it difficult for proponents of HSR to convince the state to introduce HSR infrastructure. At the same time, it was in this context that the Ecotrain narrative began to gain popularity as a new counter-narrative to Zerotrain. This chapter shows how the period from 1999 to 2013 was one of ‘unanswered resurgence’ in Canada, where both the Ecotrain and Zerotrain narratives competed for political legitimacy: On one hand, the emergence of a roll-out variant of neoliberalism – a “creative and re-regulatory moment” of contemporary capitalism (Peck & Tickell 2007, p., 34) – as espoused by the Ecotrain narrative, enabled

a new conceptual space wherein it was once again acceptable for governments to entertain the idea of financing high-speed rail lines within the QWC and CEC (in partnership with private sector backers), so long as the venture could demonstrate its economic viability. On the other hand, the concurrent neoliberal adherence to ‘fiscal responsibility’ continued to act as a predominant force in decision-making circles, and governments continued to show wariness towards large-scale, long-term public investments. In short, throughout the period the competition between these narratives produced a stalemate wherein HSR development was unable to move past its increasingly popular conceptualization. The chapter begins by briefly characterizing broad shifts in global neoliberalization during this period.

Global Neoliberalism in the 21st Century: ‘Dead but Dominant’

Two prominent themes characterizing the global political economy during the first decade of the 21st Century were ‘crisis’ and ‘response’. Geopolitical, geoeconomic and geocological crises and their varied attempted social responses would all shape the expression and contestation of neoliberalism. The attacks of September 11th, 2001, served as one of the most dramatic geopolitical crises of the contemporary era, and precipitated a long neoconservative ‘War on Terror’ as a response which profoundly oriented the world along America’s “economic and political interests in the energy-military complex” (Albritton et al. 2010, p.xiv). The global financial meltdown of 2008 served as a major geoeconomic crisis – a crisis both *of* and *within* neoliberal capitalism. Already by the turn of the Century critics of neoliberal globalization had pointed to the crises within neoliberalism – rising inequalities, the decline of democratic accountability and sovereignty, the overconcentration of corporate power, growing unemployment and job

insecurity, and environmental degradation, among other problems (Klein 2000; Harvey 2005; Steinhauer 2009). Yet the credit crunch and market collapse of 2008, occurring in the epicenter of global capitalism, helped illustrate the crisis *of* neoliberalism itself (Duménil & Lévy 2011; Overbeek & van Apeldoorn 2012). While some commentators would claim that the global financial crisis and new social movements marked the end of the neoliberal period (see for instance Wade 2008; or MacDonald & Ruckert 2009), all signs seemed to point to the continued dominance of the neoliberal creed in the world's most powerful states and institutions. Thus Neil Smith, invoking Habermas, spoke of neoliberalism in 2012 as being “dead but dominant” – dead in the wake of the challenge from the anti-globalization movement, but dominant in the sense that it had yet seen no genuine global replacement (Smith 2012). For instance, in the aftermath of the crisis the G8, G20, and the global IFIs continued to call for a global order based on the “commitment to free market principles..., respect for private property, open trade and investment, competitive markets,” albeit with “efficient, effectively regulated financial systems” – a mantra conveyed in the G20's ‘Washington Declaration’ (see Postel-Vinay 2013, p.96). Meanwhile, there was also growing awareness of the global environmental crisis most poignantly illuminated through Anthropogenic climate change – a crisis which had materially reached critical thresholds decades earlier but which arguably became politically recognized as a global crisis by the international community in the early years of the 21st Century.* These crises and their responses placed neoliberalism on

* While the Intergovernmental Panel on Climate Change (IPCC) had been created in 1988, it was only after the Third Assessment Report (TAR) of 2001, when more than a dozen national science academies issued a joint statement supporting the TAR's conclusions, and after the popularization of global warming through films like Al Gore's *An Inconvenient Truth* (Guggenheim 2006), that the issue of climate change became

shaky ground. As Albritton et al. wrote in 2010, “the capitalist triumphalism at the end of the Cold War that energized neo-liberal economic policies has now been deservedly put on the defensive as it fails to deal with looming human and ecological problems of great scope and seriousness” (Albritton et al. 2010, p.xv).

It was in this context of crisis and response that decision-makers turned to roll-out variants of neoliberal governance. The aim was to produce a ‘sustainable’ variant of neoliberalism, at least conceptually, through governance tools or private-sector initiatives such as targeted ‘neo-Keynesian’ stimulus spending, Corporate Social Responsibility (CSR) campaigns, and the re-regulation of markets. Notions of ‘Third Way’ capitalism were conveyed by political leaders such as US President Barack Obama, “in which the market is allowed to do its work, relatively unimpeded, complemented by modestly compensatory forms of social amelioration” (Peck 2010, p.239). By appealing to the logics inherent to this ‘creative and re-regulatory’ moment of neoliberal capitalism – a capitalism which sought to be socially, ecologically and economically sustainable – movements calling for the institution of a ‘green economy’ or so-called ‘green infrastructures’ have found a growing audience (Wanner 2014). This global political economic context thus helps to shed light on the international resurgence of interest seen in HSR as a ‘sustainable’ mode of transportation.

globally recognized as a crisis. It was for this reason that the Nobel Peace Prize was jointly awarded in 2007 to Gore and the IPCC.

Global HSR in the 21st Century: The Fourth Wave of Railway Modernization

Renewed interest in bringing HSR to Canada's busiest corridors (as discussed below) can be linked to a broader global resurgence of interest in HSR since the turn of the Millennium. As the Worldwatch Institute noted in 2011, in the previous decade numerous countries had joined the global HSR club and numerous others had made official plans to do so (Renner 2011). During these years high-profile HSR projects, in Great Britain, the US, and China in particular, helped refocus the world's attention on this transport technology, sparking discussion about the potential social, ecological and economic impacts of these investments (de Rus 2009). In 2003, the Chinese government announced plans to invest \$250 billion to build 7500 kilometers of dedicated electrified track (more than the rest of the world combined). The first Chinese HSR line was introduced in 2008, and additional investments were made; by 2013 a network had been built to connect 100 cities with over 10,000 kilometers of track, carrying 2 million passengers *every day* (The Economist 2013a). In Great Britain, after the successful introduction of the High-Speed 1 (HS1) project linking London to the Channel Tunnel, plans were unveiled in 2010 for an 'HS2' project, intending to connect London to Birmingham (with plans to expand further north thereafter) at an initial cost of £54 billion (Gourvish 2010). Meanwhile, US President Barack Obama would increasingly wax poetical about HSR, claiming in his 2011 State of the Union address that within twenty-five years eighty percent of Americans would have access to high-speed rail, and further that "everybody stands to benefit" from the construction of "a new system of high-speed rail"; as Baker (2014) explains, this was part of Obama's "promise to lead America into a green industrial economy," one in which "[high-speed] trains would help end our dependence on oil as

well as our rapid transformation of the earth’s climate and allow us to re-create sustainable communities” (p. 45). The President’s statement had followed an announced stimulus funding package in 2010 of \$53 billion for 13 HSR projects over a six-year period (Cooper 2011).^{*} Yet the global HSR resurgence extended far beyond Great Britain, the USA and China; HSR projects were planned or under construction in numerous developing nations as well, including Algeria, Morocco, India, Iraq, Malaysia, and even Uzbekistan (see Tables 7A and 7B).[†] Further, the arguments underpinning HSR investment within this global resurgence were distinct from the early years of HSR’s popularization. Of particular import, as showcased in the rhetoric of HSR development in the US, was an increasingly internalized and accepted argument about the technology’s assumed sustainability potential. This discourse had become more important as popular concerns about fossil fuel supply and climate change had prompted new thinking about lowering the ecological footprint of automobile and airplane use. As de Rus claimed in 2009, “investment in high speed rail infrastructure is being supported by governments and supranational agencies with the declared aim of working for *a more sustainable transport system*” (2009, p.26; emphasis added).

^{*} However, the thirteen corridors were quickly narrowed down to only four – in California, Florida, Ohio and Wisconsin. As Baker explains, Tea Party state governments elected later in 2010 in Florida, Ohio and Wisconsin then “gleefully renounced federal money for the train corridors as ‘high-speed boondoggles’” (2014, p.52), leaving California as the only *new* HSR project in the US (adding to the existing Acela Express line in the Northeast Corridor).

[†] A high-speed line in Uzbekistan between Tashkent and Samarkand, using Talgo-produced trains reaching speeds of 250km/h, was under construction as of 2011. The government had reportedly only built 35km of high-speed track but lacked the capital to finish the project (Central Asia Online 2011).

**Table 7A: HSR Lines Around the World
Nations *With* HSR by 2013**

Country	In operation	Under Construction	Officially Planned
<i>Europe</i>			
Austria	1		
Belgium	4		
France	9	4	14
Germany	11	3	5
Italy	9		2
Netherlands	1		
Spain	15	9	10
Switzerland	1	2	
United Kingdom	2		1
<i>Asia</i>			
China	26	20	6
Japan	15	6	2
Russia	1		
South Korea	2	1	1
Taiwan	1		
<i>Middle East</i>			
Turkey	2	4	11
<i>North America</i>			
United States	1		3

Source: International Union of Railways (2013b).*

* The UIC data uses 250km/h as a benchmark speed for HSR, with some exceptions. The data has thus been supplemented to include lines meeting the definition of HSR used in this thesis.

**Table 7B: HSR Lines Around the World
Nations *Without* HSR as of 2013**

Country	Under Construction	Officially Planned	Proposed
<i>Europe</i>			
Bulgaria	4	3	
Denmark	1		
Greece	2		
Latvia			1
Poland		1	
Portugal			1
Sweden		1	
<i>Asia</i>			
India		1	
Malaysia			1
Singapore			1
Thailand			5
Uzbekistan	1		
Vietnam			1
<i>Africa</i>			
Algeria	1		
Morocco	1	1	
<i>South America</i>			
Argentina			1
Brazil		1	
<i>Oceania</i>			
Australia			1
<i>North America</i>			
Canada			2
<i>Middle East</i>			
Iraq			1
Saudi Arabia	1		

Data Source: International Union of Railways (2013b).*

* The UIC data uses 250km/h as a benchmark speed for HSR, with some exceptions. The data has thus been supplemented to include lines meeting the definition of HSR used in this thesis.

In this sense there are a number of reasons why the resurgence of interest in HSR seen in the 21st Century can be framed as part of a fourth global wave of investment in railway infrastructure. As Whitelegg *et al.* explain (1993), the first wave saw the building of rail networks in the 19th Century, as the world's leading economies transitioned into the industrial era, while the second wave began at the beginning of the 20th Century, seeing the advent of electrification and higher speeds within the conventional railway industry. The third wave, during the Post-War years, was characterized by a weaker competitive position for conventional rail relative to other modes, a focus on infrastructure renewal as opposed to expansion, and the integration of rail services under the auspices of state agencies (the third wave therefore saw the early years of HSR development; *Ibid.*).

The fourth wave thus featured at least three distinctions: First, no longer was HSR – the highest form of passenger rail modernization – solely a technological marvel of the densely populated rich nations like France and Japan; now dozens of nations, including some in the ‘Global South’, were entertaining the idea. Second, the underlying political economic context had changed, as throughout the 1980s and early 1990s many national governments had purged transport from the public sphere to the private sector or initiated a removal of the state from transport markets (Knowles 1993; Charlton & Gibb 1998). As a result new business models – often partnerships between public financiers and private operators – had to be conceptualized. Third, as noted above, the fourth wave featured the growing popular perception that HSR could play a role in reducing the social and ecological havoc being generated (in part) by the emissions of greenhouse gases and air pollution so closely associated with automobile and airplane travel. This fourth wave of

rail modernization was ‘global’ insofar as it permeated the borders of dozens of nations large and small, ‘industrialized’ and ‘industrializing’, and was witnessed in all inhabited continents of the planet.*

What does the fourth wave actually look like in terms of the expansion of HSR? According to the International Union of Railways, by 2013 there were over 90 operational HSR lines in 16 nations. This marks a major growth compared to previous periods. For instance, by 1998 there were only 6 nations with genuine HSR lines in place. Further, by 2013 an additional 21 nations *without* HSR were either contemplating, officially planning, or in the process of building HSR projects (International Union of Railways 2013b). According to Gourvish (2010), between 1999 and 2012, 77 additional HSR lines entered into service,[†] compared to 12 lines that became operational between 1983 to 1998 (during Canada’s period of HSR Impasse), and only 7 lines between 1964 and 1982 (during Canada’s period of HSR Emergence). As Table 7C demonstrates, each of these periods of HSR development featured different global geographical dimensions, with Japan dominating HSR construction during the early period, France, Germany and Spain each leading the world during the middle period, and then China producing more than half of the world’s new HSR infrastructure during the late period (coinciding with the fourth wave of global railway investment).

* The use of the term ‘global’ here is not meant to exclude the majority of nations which simply could not afford to capitalize an infrastructural project of this magnitude, but rather to indicate the scale of the trend.

[†] This figure includes lines that were under construction at the time of writing yet slated to open before 2013.

**Table 7C: Three Periods of Global High-Speed Rail Development
(KMs of operational track)**

Period	Japan	France	Italy	Germany	Spain	Britain	China	Other*	Total
1964-82	1804 (76%)	419 (18%)	138 (6%)	0	0	0	0	0	2361
1983-98	148 (7%)	862 (37%)	110 (5%)	636 (28%)	471 (20%)	0	0	72 (3%)	2299
1999-2013	436 (2%)	890 (5%)	628 (3%)	711 (4%)	2762 (14%)	113 (1%)	10675 (56%)	2817 (15%)	19032
Total	2388	2171	876	1347	3233	113	10675	2889	23692

Data Source: Gourvish (2010); International Union of Railways (2013b).

Of course, as the Canadian case demonstrates, popular interest in HSR, or even political pronouncements in favour of the technology, do not always result in actual project development. This is an important caveat, since it reminds us that the resurgence of interest in HSR during of the fourth wave operated at a conceptual level and did not always manifest materially.

Given the variegations in neoliberal experiences around the world, it is unsurprising that in some nations proponents were able to leverage the capacities of the state to invest in HSR, whereas in others the pro-investment argument was a harder sell. As de Rus explained in 2009, “the European Commission has opted enthusiastically for this technology; meanwhile countries like the UK or the USA have been reluctant in the recent past to finance the construction of a high-speed rail network with public funds, which is a priority in the European Union” (de Rus 2009, p.171). Both the California HSR project and the British HS2 project introduced towards the end of the decade would change this trend, and in some ways reflected the roll-out forms of neoliberalism in

* Other nations include Austria, Belgium, Netherlands, Russia, South Korea, Switzerland, Taiwan, Turkey, United States.

which targeted investments were legitimized in certain contexts – particularly in the wake of financial recession in both the UK and US. Whereas roll-back neoliberalism had seen the privatization of material transport assets and the state’s attempt to retract itself from long term commitments to transport subsidization, roll-out neoliberalism marked the commercialization of practices and beliefs around transport relations in which everyday transportation choices were increasingly being commoditized, transport firms were increasingly required to be financially self-sufficient, and where states could pool sums of capital to be used for specific, one-time commercially-viable projects. As Bunting wrote in 2004, “governments now believe that the market, not policy, should decide what is provided, and support for public transport has softened accordingly” (p.5).

In theory, private high-speed rail lines fit well within the neoliberal model of transport relations, since HSR could operate as yet another mode competing for customers. In practice, however, new lines do not typically come together without a great deal of government intervention (Campos & de Rus 2009). By way of example, even the totally private HSR service introduced in Italy in 2012 was largely dependent on a legacy of state action and regulation. The Italo service would compete with the state-owned HSR line (TrenItalia’s Frecciarossa) on two routes, yet it would use the very same HSR infrastructure (which had been financed and built by the state). A comparison between the two lines by Walther (2012) concluded that the services offered by the two companies were similar: “Book far enough ahead and both trains offer a fast, reliable ride in second class at a good price.” The private service is in its early stages, and so it is unclear whether Italo will manage to outcompete TrenItalia. In either case it is hard to imagine

how Italo could have come about without already having public HSR infrastructure in place.

In some nations (notably Great Britain and the United States), a history of contestation between different beliefs regarding the role of the state in transport led to a considerable amount of tumult and controversy when HSR projects were proposed. For instance, by 2013 the British HS2 plan was suffering from considerable amounts of opposition. Public support for the project was down to 29%, and the feasibility studies were plagued with cost miscalculations (The Economist 2013b). A similar story was seen in California, after voters approved an investment of \$68 billion for a new high-speed rail link between San Francisco and Los Angeles in 2008. While political opposition to the project was strong from the beginning, it was further bolstered when costs went over budget and the rail authority was accused of corruption and later sued for altering its plans. By 2013 a majority of Californians believed the project was “a waste of money”, and funding was held up in the courts (Hornyak 2013).

In contrast, in both Japan and France, where HSR capacity had already been well developed and where HSR held an established place within the national transport structure, contemporary expansions were more successful. For instance, by 2013 the Shinkansen network, operated by the various affiliates of JR Group, together formed the busiest HSR network in the world. Early in 2013 it successfully tested a maglev prototype, which if entered into service in the mid 2020s will regularly reach speeds of 500 km/h (Smith 2003; Kahumoto 1999; Lallanilla 2013). In France, an additional 890 km of dedicated high-speed track were built during this period by the SNCF. While the SNCF faced tremendous pressure to privatize in the 2000s, it managed to hold on to its

public status, at least in legal terms. Nevertheless, as d'Allard argues, after 2003 the SNCF underwent “rampant liberalization” and moved “toward sub-contracting in order to satisfy purely book-keeping interests” (d'Allard 2013). Yet for the most part, the TGV network was profitable during this period, which makes it – along with Japan's HSR network and, at least on paper, China's – unique amongst the world's high-speed rail systems. Like Japan, the French HSR system became so wholly integrated into the national transport structure that expansion was considered inevitable wherever demand increased.

Meanwhile, the sheer size of China's HSR network, and the pace with which it has been built, is nothing short of incredible. This was facilitated by China's specific brand of ‘centrally-planned neoliberalism’, in which the state's involvement in infrastructure development is characteristic of Keynesian-style interventionist planning (Harvey 2005). In less than a decade, the nation developed the world's largest HSR network with the fastest average travel speeds. As Osnos wrote in 2012, HSR stations in Beijing and Shanghai handled over 240 million passengers per year – making them the largest stations in Asia. Additionally, “some three hundred new stations have been built or revitalized by China's Railway Ministry, which has nearly as many employees as the civilian workforce of the United States government” (Osnos 2012). While the growth of HSR travel in China was an impressive accomplishment, it is far too early to assess the megaproject's long-term success. A 2011 high-speed train crash which killed 35 and injured nearly 200 passengers profoundly shook the nation's confidence in the mode and unleashed a wave of public criticisms about how planners cut corners to save time and

costs, thereby potentially putting the public at grave risk (The Associated Press 2011; Osnos 2012).

In short, while established HSR networks continued to thrive and even expand in the early years of the 21st Century, in nations where no such networks existed projects tended to have trouble getting past the conceptualization phase, regardless of their growing popularity. A key example, other than Canada, is offered by Australia, where decision-makers continued to debate the idea of an Eastern Corridor* for decades without ever taking any steps towards genuine development (see Laird 2011). In such nations the framing of HSR as a harbinger of sustainability has thus been a useful aid in marketing HSR investment (de Rus 2009). Proponents of HSR have thus increasingly appealed to the long-term social, environmental and economic benefits to be accrued from investment as a means of appealing to neoliberal governments by speaking their language. An op-ed by the *New York Times* Editorial Board exemplifies this viewpoint, calling for increased funding for HSR due to its range of expected benefits: “High-speed rail can play an important role in the nation’s transportation system by reducing congestion at airports and on highways. It can also provide a big economic boost while helping to reduce pollution that is causing climate change” (New York Times Editorial Board 2014). Around the world HSR was being adapted (both conceptually and materially) to address an historical period of economic and socio-ecological transformation.

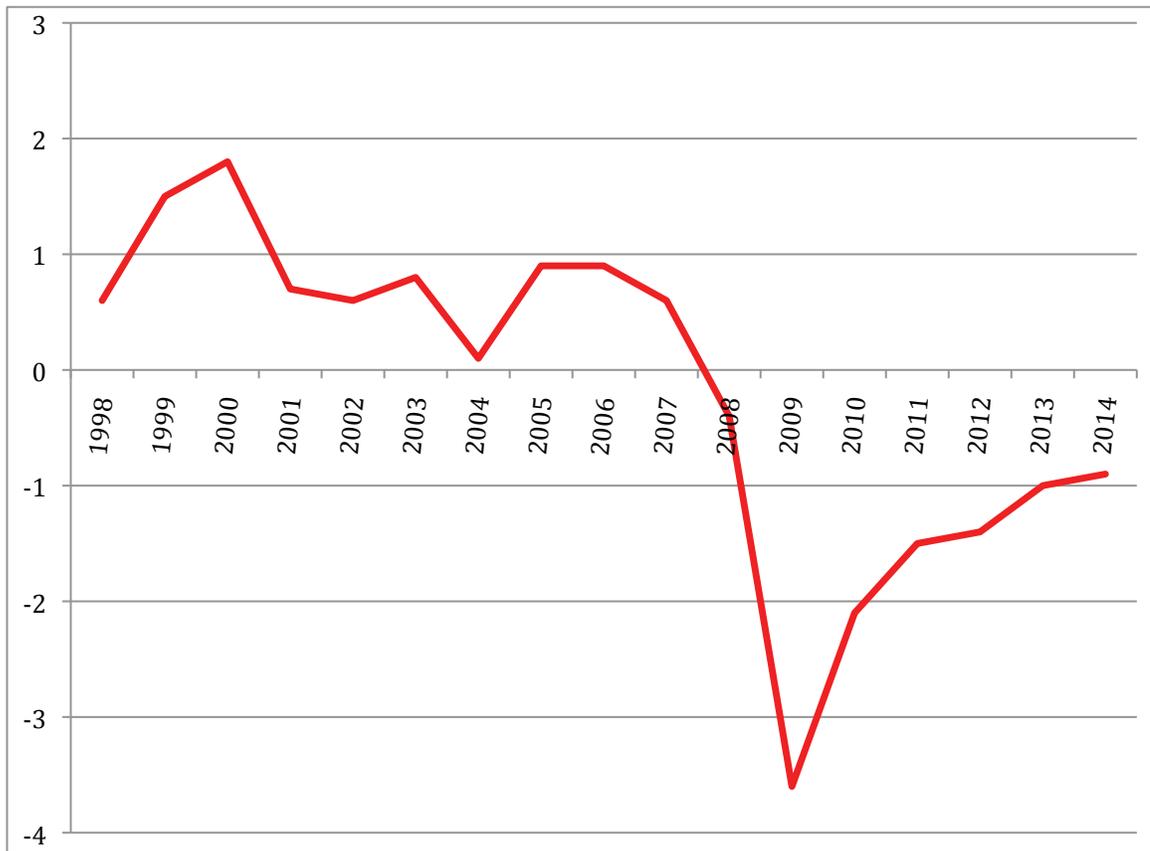
* The 950km stretch between Melbourne and Brisbane, through Canberra and Sydney.

Roll-out Neoliberalization with Canadian Characteristics

Peck and Tickell's theory of neoliberalization notes how the earlier roll-back period saw greater attention to state spending *cuts* while the roll-out phase was more concerned with fiscal responsibility (Peck & Tickell 2007, p.34). To a certain extent this is reflected in Canada's deficit/surplus record, with the caveat that short periods of roll-back and roll-out neoliberalism were expressed throughout the era. The federal Liberal governments of Chrétien (1993-2003) and Martin (2003-2006) scaled back state spending (as a percentage of GDP) and took up the causes of eliminating deficits and cutting corporate taxes in clear roll-back fashion. As the neoconservative Cato Institute observed in 2009, "Canada has balanced its budget every year since 1998 — not by raising taxes, but *by cutting spending*" (Edwards et al. 2009 emphasis added) – all while corporate tax rates have been reduced from 28% to 15%. This is not to suggest by any means that the Liberal governments or the following Harper government (elected in 2006) did not spend. A chart showing net federal expenditures from 1999 to 2013 adjusted for inflation would be characterized by a sharp incline from \$162 to \$280 billion (2011 dollars). Yet where spending has taken place, it has been within the name of 'fiscal responsibility' – targeted spending on key interests, usually within the private sector with the intention of inciting entrepreneurial or business activity. As a relation to GDP and in the context of the nation's contemporary history, the monetarist fiscal policies and austere character of budgets during this period are revealed (see Figure 7A). Unbeknownst to the Cato Institute in 2009, the era of consecutive surpluses had temporarily ended, mostly due to the global financial crisis and the Canadian government's attempts to react to recession through a certain degree of stimulus spending (most noticeably in 2009, when it saw a

\$58 billion deficit; in 2011 dollars). Yet while the revenue-to-expenditure ratio started to decline after 2006, it started to rise again after 2009 through to 2014. In short, the government had its eyes on balancing the budget in time for the 2015 federal election.

Figure 7A: Federal Annual Surplus/Deficit as a Percentage of GDP, 1998-2014*



Data Source: CBC News Interactive (CBC News 2014c).

The Harper government's record thus demonstrates both roll-out and roll-back tendencies as far as monetary policy is concerned. One example of this double-headed approach is found in the federal government's 2010 proposal to purchase 65 F-35 fighter jets from US firm Lockheed Martin at an extraordinary high cost of \$16 billion; when

* Negative values represent deficits, while positive values represent surpluses.

cost estimates nearly quadrupled and the contract became politically controversial, the government distanced itself from the deal. By 2013 the defense budget had again been curtailed (see Postmedia News 2013). Other areas of federal policy were marked by both roll-out and roll-back variants of neoliberalization: The Harper government intervened in high-level federal labour disputes and repeatedly expressed its disdain for unions; dramatically reduced the size of the public service; introduced an aggressive resource extraction policy featuring a suite of regulatory and fiscal tools to encourage development of natural resources across the country and internationally (in places where Canadian mining interests were situated); sought increased free trade deals with Europe, Central America, and Asia in addition to numerous bilateral trade agreements to increase foreign investment; argued against national ‘protectionist’ policies domestically; reduced the amount of spending on social welfare; and tightened regulations to make it more difficult to acquire social safety net funds (Rampure 2013; Healy 2008).

Neoliberal policies were also featured in the provinces during these years. Quebecois governments during this period largely towed the neoliberal line, including the Charest Liberal government in power from 2003 to 2012 (Fidler 2012) and the subsequent Parti Quebecois government led by Pauline Marois from 2012 to 2014, which implemented “a neoliberal austerity program that has frustrated and disappointed many of the party’s traditional supporters in the unions and social movements” (Fidler 2013). As Séguin (2014) reported, Québec’s newly elected Liberal Premier Philippe Couillard spent his first day in office announcing “austerity measures”.

In Ontario, while the Liberal McGuinty government (2003-2013) in part upheld the neoliberal reforms instituted by the PC governments of Mike Harris (1995-2002) and

Ernie Eves (2002-2003) – for example by continuing to focus on balancing budgets without drawing in additional tax revenue, or further consolidating the privatization of home care schemes and pursuing other public-private partnerships – in other areas it repealed them – for example by instituting additional funding for services and education (Mackenzie 2006, p.2). The Ontario Liberal Party’s quasi-neoliberal formation was further pursued by successor Kathleen Wynne, whose government signaled a willingness to invest billions of dollars in deficit spending, much of it to cover needed transport infrastructure development or improvements (Morrow 2014).

In Alberta, the legacy of minimal spending on public services continued beyond the Klein years, influencing the fiscal policies of the subsequent Stelmach government (2006-2011) as well as the Redford government (2011-2014). In 2013, while Alberta spent approximately 12% of its Gross Provincial Product on public services, the average amongst the rest of Canadian provinces was 22.5%. As a result of being subjected to market forces, citizens of Alberta paid higher than average out-of-pocket fees for health care, education, home utilities, and child-care (Gibson 2010).

An equally important dimension of Canadian neoliberalization during this period involved the convergence of neoliberal principles with those of sustainable development – as had been witnessed at an international level in the late 1980s and 1990s (see Chapter Six). Increasingly throughout this period EM principles had come to characterize the discourse and policy of both the federal and provincial governments in their attempts to carry out sustainability plans, particularly in efforts to address climate change and

sustainable transportation.* As Transport Canada's website on sustainable transportation noted in 2011, the government sees its own role in the process as an enabler of market relations as consistent with plans for minimizing the emission of transport air pollution (Transport Canada 2011). The government first spelled out this policy in a 2003 document titled *Toward Sustainable Transportation*:

The Government of Canada believes that the transportation system of tomorrow should remain largely market-driven, where government sets a competitive framework and intervenes when the public interest would be served. Where competition is weak or absent, government intervention may be needed to restore competitive outcomes with the least possible disruption to the market framework (Transport Canada 2003, p.6).

This political economic vision, in which intervention and regulation are understood as tools to *reinforce* market relations, was perceived as the optimal way to encourage technological innovation and transport mode efficiency improvements. The policy thus emphasized the 'freedom' of producers and consumers to make choices based on market signals, hence Transport Canada's explanation that "a large part of the burden for making transportation more sustainable will fall on individuals and corporations *making choices* of mode, vehicle, fuel, technology and operating practices" (Transport Canada 2003, emphasis added).

As explained in Chapter Six, both roll-back and roll-out neoliberalisms share similar understandings of sustainability. Where the two differ is in their emphasis of and

* The following statement by Prime Minister Stephen Harper in 2007 regarding climate change is instructive: "Not only can we make [environmental sustainability] dovetail with economic growth, but I think it's necessary to have environmentally sustainable growth in the long term... We have a plan that would put those investments here in Canada and apply technology... to the reduction of Greenhouse Gases... We've got to take a longer term approach and a technologically based approach" (quoted in Cable Public Affairs Channel 2007).

openness to government interventions such as spending, taxation, and market regulation, with roll-back neoliberals adopting a more Promethean response and roll-out neoliberals that of an EM discourse (Dryzek 2013).

There are thus examples during Canada's roll-out neoliberal period where large-scale government spending on infrastructure did occur. The 2007 Building Canada Plan serves as a good example; it involved \$33 billion in stimulus funds for infrastructure projects (see Government of Canada 2014). Yet of the four governments considered here, during this period the Ontario government tended to be the most open to such state investments. For instance, Ontario's Green Energy Act (GEA) of 2009 had all the hallmarks of stimulus neoliberalism infused with principles of EM: Through its feed-in tariff program for wind, photovoltaic and biogas power producers, the government committed billions of dollars to de-carbonize the electricity grid, while claiming to create opportunities for 'green growth' and 'green jobs' (this included a 20-year, \$9.7 billion contract with Samsung to build wind and solar energy capacity in the province; see The Canadian Press 2013a). The GEA also contained neo-Keynesian procurement clauses requiring companies to use technology and materials built within the province, although these were subsequently removed in 2013 after a challenge brought through the WTO citing unfair treatment of foreign suppliers (Spears 2013). Neoliberalism in Canada has thus witnessed unique characteristics, as governments have at times showcased strict 'cold bath' monetarism more reminiscent of the roll-back era – and other times demonstrated a willingness to spend big (even incurring debts) when such expenditures seemed to be a way of setting the economy back on a course of economic growth. As the remainder of the chapter shows, the stalemate between roll-back and roll-out variants of

neoliberalism during these years is largely reflected in the experience of HSR development as well.

Resurgence Unanswered: Canadian HSR Development in the 21st Century

While HSR plans in Canada had repeatedly faced setbacks throughout the 1970s, 80s and 90s (described in Chapters Five and Six), popular interest in HSR did not dissipate. In line with the fourth wave of global railway investment, the idea faced a popular resurgence in Canada as well. By 2008, a nation-wide poll by Nanos found that 53.5% of Canadians “supported” the country introducing high-speed rail, while an additional 24.8% “somewhat supported” the idea (Nanos Research & Railway Association of Canada 2008). The following year EKOS found that 62% of Canadians “strongly supported” HSR, with an additional 28% “somewhat” supportive (Graves 2009). An informal poll by the *Toronto Sun* in 2013 reflected similar results, with 88% of respondents agreeing that it was “time for the Canadian government to invest in a high-speed rail line” (Kent 2013). Hoping to ride upon a wave of public support, a national HSR interest group was formed 2008. *High Speed Rail Canada* would become a major proponent of the Ecotrain narrative, advocating federal investment in HSR “for the economy, for the social infrastructure, and the environmental [benefits]” (CBC 2014). The group became increasingly vocal about the fact that the nation was the only G8 country without existing HSR infrastructure. This sentiment of ‘lagging behind’ other industrialized or industrializing nations caught on, as showcased in the headline of a 2011 news article referring to a new line between Beijing and Shanghai: “China’s doing it. Why can’t we?” (Mallick 2011).

Despite the clear popularity of HSR amongst the public, the federal government was just as clear about its Zerotrain spending reduction priorities. This would influence how VIA and other proponent groups – both of a Turbotrain and Ecotrain persuasion – would sell the idea of passenger rail modernization. In 2002, instead of calling for genuine HSR development, VIA proposed a new project called ‘VIAFast’, a plan to increase speeds using conventional infrastructure and at a lower cost than true HSR. For the project VIA sought a government investment of \$2.6 billion over a 5-year period, which according to the plan would eventually yield trains travelling at 240 km/h. In its final report the corporation increasingly appealed to the rhetoric of sustainability – cost efficiency, overall profitability and tangible socio-ecological benefits:

“Unlike a very high-speed rail system, which would require many years to become operational, this plan leverages existing assets: incremental improvements in rail service will become evident immediately. The investment required is significant, but it will provide significant economic, social and environmental benefits, at a cost far lower than building a new, very high-speed system” (VIA Rail Canada 2002).

The VIAFast proposal went on to emphasize how the ‘business as usual’ approach to transportation in Canada was not sustainable, noting how “the costs to business and industry in lost time and productivity.... [and] in terms of environmental degradation, health, and quality of life – are simply too high” (Ibid.). By offering safer, more efficient intercity transportation (in terms of time and energy use), such markers of unsustainability could be confronted.

Despite the VIAFast proposal, the corporation would continue to face a tumultuous history, an ironic legacy of being a state-run enterprise in neoliberal times as well as an entity with no guiding federal legislation officializing its status. While a \$700 million capital injection was offered up by the federal government in October 2003 (a

way to placate VIA and the nation's passenger rail supporters without having to shell out the full amount requested in the VIAFast proposal), the offer was subsequently withdrawn after Paul Martin became Prime Minister in December of that year, when he announced a freeze in spending on all major capital projects (Yourk 2003). On one hand, in the context of roll-back neoliberalism VIA continually had to justify its existence and its required subsidy, suffering from repeated budget cuts by less sympathetic governments (Greenlaw 2007). As a result of periodic budget cuts, the corporation was repeatedly forced to reduce services outside of the profitable QWC, with the side effect of further cutting off transportation access to numerous small towns and municipalities outside of Ontario and Quebec (Ditchburn 2012). At the same time, the manifestation of roll-out neoliberalism served as the impetus for various rounds of capital injections for special projects (such as equipment upgrades or the construction of new stations or new track segments), as seen in both a 2000 investment of \$402 million "to revitalize passenger rail service in Canada through a five year capital expenditure program for Renaissance cars" (VIA Rail 2014c),* or a 2009 investment package given to the corporation under the auspices of Canada's Economic Action Plan, valued at \$923 million over a five-year period. In announcing the latter round of funding, the Harper government boasted about its "billion dollar transformation" of VIA, somewhat of an

* In 2000 VIA purchased 139 rail cars from Alstom at a significant discount - \$130 million (the actual market value of the trains was upwards of \$400 million), and remodeled them as the company's new 'Renaissance' fleet. The cars were originally destined to be part of British Rail's 'Nightstar' service, which was supposed to provide overnight linkages between the UK and continental Europe via the Channel Tunnel. However, the Nightstar program was cancelled in 1999 due to cost viability concerns, in part due to the rise of discount airlines such as RyanAir and EasyJet (VIA Rail Canada 2000, p.11; Glasspool 2014). The Nightstar cars were built by Metropolitan Cammell, a British rail manufacturer based in Birmingham. The company became a subsidiary of Alstom in 1989, and was later closed in 2005.

overstatement given that the average annual value of the expenditure totaled only \$184 million – an amount which in the 1980s was seen as roughly the bare minimum subsidy required to keep VIA alive. It is telling that during the period of ‘Unanswered Resurgence’ these types of one-time special investments designed to stimulate the economy with improvements to sustainable transport infrastructure were legitimized as the appropriate mechanism to achieve Canadian passenger rail modernization.

Within this context of limited and ever-volatile budgets, VIA reconsidered its approach to funding HSR development, and in 2011 floated the idea of turning to the private sector to help “finance, design, build and maintain” a new HSR system, with VIA staying on as operator (Blackwell 2012). Yet the government’s own financial analysis presented a skeptical take on the likelihood of any real movement in this direction, reaching the following dead-end conclusion:

The current economic climate, uncertainty associated with the future growth potential of high-speed passenger rail, the availability of alternative and competitively priced modes of transportation, and VIA’s continued reliance on government support, all conspire against the introduction of high-speed rail in the near term in Canada (Dupuis 2011, p.15).

As part of the response to the dominance of the Zerotrain narrative within the federal and provincial political arenas, proponents of passenger rail renewal during these years would try to bolster the Ecotrain narrative. As noted above, VIA would repeatedly point to passenger rail (both conventional and high-speed) as a sustainable alternative to automobiles and airplanes. For instance, when VIA reflected on the Renaissance funding package of the early 2000s in its online corporate history, it claimed that the new equipment “help[ed] Canada attain the objectives set by the Kyoto Protocol for reducing greenhouse gas emissions” (VIA Rail 2014c). As part of this trend, VIA launched a new

marketing strategy in 2007, adopting “A Green Choice” as a second corporate tagline, branding itself as “an alternative means of travel that is respectful of the environment” (VIA Rail 2007). A narrative of sustainability was increasingly being cast around passenger rail – a narrative which a new consortium would subsume in its study of HSR in the QWC initiated in 2008.

The Rise and Fall of the EcoTrain Report

With the VIAFast proposal killed by the Martin government in 2003, years would go by – and a new government elected – before genuine attention to HSR resurfaced. In part bolstered by the evident growing popularity of HSR, the Ontario, Québec, and federal governments were again compelled to review the idea in 2008, creating a bidding process for a private sector update to the 1995 tripartite report (Transport Canada et al. 1995). A consortium by the name of EcoTrain was successful, producing a report in 2011. The consortium was comprised of an assortment of global construction, transport engineering and financial consultants and producers from around the world: Dessau, MMM Group, KPMG, Wilbur Smith & Associates and Deutsche Bahn International. The group’s decision to use the name ‘EcoTrain’ is revealing of the growing perception at the time that HSR was by nature an environmental enterprise. As the Québec Premier Jean Charest explained in a press release announcing the initiation of the study, the importance of the infrastructure’s environmental potential was now more significant than before: “It’s important to remember the context has evolved greatly since the 1990s, if only in terms of the environment and the need to reduce greenhouse gases” (CBC News 2008b). EcoTrain itself acknowledged this in its third deliverable document, noting that HSR’s social and environmental impacts would be “analyzed and discussed, taking into account

the fact that the relative importance (actual or perceived) of these issues may have changed since [the] 1995 [study]” (EcoTrain 2009). These statements, made years before the final report, suggest that the consortium was well aware of both the growing popular perception that HSR was a sustainable transportation project and further, that this construct could help market and legitimize public investment in HSR.

Like prior studies of the QWC, the EcoTrain study evaluated two technological scenarios – a diesel traction train of 200km/h and an electric traction train of 300km/h. The latter option would enable travel between Montreal and Toronto in just over 2 hours and 45 minutes, and would attract 11.1 million passengers throughout the entire corridor by 2031, generating \$1.3 billion in revenue for the operator. The capital cost for the whole corridor was pegged at \$21.3 billion, but the economic analysis showed that the net present value for the whole corridor was negative, at a net loss of \$992 million over the 30-year course of the project (EcoTrain 2011). The release of the final report was delayed to mid-February 2011, but even then it was released against the wishes of EcoTrain. Just prior to its release the consortium had received information that the projected air fares it had used to prepare ridership and revenue forecasts were incorrect, and the effect of correcting the data was likely to have been “positive in terms of HSR ridership, revenues, cost-benefit and financial viability for the Québec – Windsor corridor” (EcoTrain 2011, p.xiv). The consortium thus asked for extra time to recalculate the final social, environmental and economic forecasts, but the governments commissioning the study denied the request. In a disclaimer at the very beginning of the report, it is implied that the governments involved had already made decisions about the

investment (Ibid.).* Unsurprisingly, the governments backed away from the idea of HSR almost immediately after the release of the EcoTrain report. Even Ontario Premier Dalton McGuinty, who had previously played into the Ecotrain narrative by referring to the project in 2010 as a “game-changer” that would “strengthen our regional economy [and] better protect our regional environment,” announced only a year later, following the release of EcoTrain’s study, that “given our fiscal context, given that we’ve entered into a period of slower growth.... it’s time for us to pause and reflect on the merits of starting that kind of a project at this point in time” (Zeliger & Greenberg 2011). Thus, like the studies preceding it, the EcoTrain report was used by political leaders to demonstrate to the public that the idea was closely being considered, while all the while the likelihood of deciding to make the large expenditures required for HSR were slim at best.

A Project for the Future (Not the Present): HSR Studies in the CEC

As in former periods, the experience of HSR development in the CEC mirrored that in the QWC, with a key difference being that in Alberta calls for new studies would resurface at nearly 3-year intervals during the Period of Unanswered Resurgence. The provincial government would repeatedly review HSR’s commercial feasibility, commissioning studies or in-house reviews of the idea in 2004, 2008, 2011, and 2013. However, the main response from political leaders, as during the former Period of Impasse, was again to respond with stalling tactics: This is what Ralph Klein opted to do after the release of the Van Horne Institute’s study in 2004, which had concluded that HSR investments *would*

* It claims that “the Governments believe revised airfare data and forecasts would not materially change decisions arising from the study” (EcoTrain 2011, p.xiv).

yield socio-economic benefits valued at \$6.1 billion and repay all or most of the \$3.4 billion capital costs within a 30-year period (Van Horne Institute 2004). The Premier was hesitant about the multi-billion dollar price tag, and thus ordered *another* study to focus specifically on the economic potential of the proposed TGV-style line (d'Aliesio 2009). The ensuing reports by Transportation Economics & Management Systems (TEMS), a consulting firm with offices in Frederick, Maryland and Hamilton, Ontario, and Oliver Wyman, a major multinational consulting firm based in New York City (see TEMS 2008 and TEMS & Oliver Wyman 2008) affirmed that HSR in the CEC was economically viable. Further, the TEMS & Oliver Wyman study claimed that the CEC was the busiest transport corridor in North America on a per capita basis (in terms of trip generation between city pairs), and concluded that “an HSR system would lead to increased economic development in Alberta,” alleviating traffic congestion on the busy Queen Elizabeth II highway connecting Calgary and Edmonton (as summarized by the Standing Committee on Alberta’s Economic Future 2014).^{*} Both the Van Horne Institute and TEMS & Wyman studies signaled a range of social, ecological and economic benefits to be accrued from HSR investment. Upon the release of the TEMS & Oliver Wyman market assessment, Alberta’s Transport Minister Luke Ouellette publicly claimed that HSR in Alberta was “inevitable” (d’ Aliesio 2009), but thereafter suggested the government was undecided and would use the information provided in the studies as it

^{*} Using the data submitted by TEMS and Oliver Wyman, the Ministry of Transportation informed the Standing Committee that the volume of travel between Edmonton and Calgary was three to four times the Toronto-Montreal trip rate. The claim regarding the CEC’s high rate of per capita intercity travel is also noted in a report by TD Bank Financial Group (2003, p.7). The report explains that the CEC has the third busiest traffic flow volume in Canada; when one then considers relative population levels, the trip rate is indeed very high.

considered the future of the province's transport infrastructure. Perhaps unsurprisingly, the pattern in the CEC was that a history of updated feasibility studies would repeat itself again and again, just as it had in the QWC.

Well aware of the Alberta government's strict monetarist record and unwillingness to intervene in the markets, HSR proponents in the province would make the case that the technology could be introduced at very little cost to the public while producing tangible economic benefits. Alberta High-Speed Rail, a company incorporated in 2005, reflected this in its mission statement, offering to build a line in the CEC that, it emphasized, would be funded "without taxpayers dollars, by private investors" (Alberta High Speed Rail 2014). A public interest group called *Alberta Bullet Train* was also founded in 2007 to "promote the acceptance and construction of a high speed rail system for the province of Alberta" given that such a project would "enhance all [Albertans'] lives" (Alberta Bullet Train 2007). These developments, along with the buzz surrounding newly released and commissioned studies, all occurring during a period of robust economic growth in the province, contributed to the popularity of HSR. A poll conducted by Leger Marketing in 2007 found that 67% of respondents agreed that the provincial government should invest in HSR (Fekete 2007).

In light of all the popular support for HSR, the response of spending-averse politicians was careful, and at times contradictory. Efforts were frequently made to belabour the point that such a service would likely not be profitable and would thus require some type of government support. In 2009, federal Environment Minister Jim Prentice – an MP from Calgary – would weigh-in on the proposed Alberta project. While acknowledging that HSR "would reduce greenhouse emissions from cars and could

become a long-term infrastructure project that would benefit future generations,” he inevitably fell back on the market line, suggesting that “any project has to fundamentally have marketplace support... It’s got to be a project that makes [commercial] sense” (in Fekete 2009).^{*} This was a similar response to Premier Ed Stelmach (in power from 2006 to 2011). While publicly referring to the vision of HSR laid out by TEMS as “visionary” (Davis 2008), the Stelmach government did little to bring the infrastructure forward other than secure various segments of old, decommissioned rail right-of-way which eventually could be used as part of an HSR corridor (Simons 2011). By 2013, with a new Premier in office (Alison Redford), the province’s Standing Committee on Alberta’s Economic Future embarked on a legislative review assessing the costs and benefits of HSR in the CEC. The committee’s final report asserted the government’s position that state funding for such an enterprise should be minimal, and further recommended that the government *not* invest in HSR in the CEC at the time, because it was not clear that there would be “sufficient demand to support the *profitable operation* of such a system” (Standing Committee on Alberta’s Economic Future 2014, p.2; emphasis added). Further, the Committee recommended that the government “investigate the development of a regulatory model to allow for private investors who can raise both the capital for high-speed infrastructure and procurement of land to be able to go forward to build this necessary infrastructure” (Ibid.). The government’s perspective – steeped in a Zerotrain narrative of development – could not have been more clearly elucidated.

^{*} At the time of writing (fall 2014) Jim Prentice had moved from federal to provincial politics, and become Premier of Alberta.

Conclusion

The number and geographical distribution of nations contemplating HSR after the turn of the Century was indicative of the growing global appeal of high-speed rail. HSR was increasingly seen by some governments and elements of civil society as a mode that could provide more frequent and easier ways of urban interconnection while simultaneously creating profitable opportunities for the private sector and helping to confront the global problem of unsustainable transportation. In the wake of the roll-out of neoliberal governance, some nations were able to effectively channel state funds into Public-Private Partnerships to bring HSR projects to fruition in ways that had not been seen as politically acceptable under a roll-back neoliberal regime.

This resurgence of interest in HSR development – coinciding with a ‘fourth wave’ of global railway investment – was also seen in Canada (at least at a conceptual level). Throughout the Period of Unanswered Resurgence commercial feasibility studies (Van Horne Institute 2004; TEMS & Wyman 2008; EcoTrain 2011; Shirocca Consulting & Anthony Steadman 2011) consistently found a TGV-style electric HST to be a viable enterprise between Toronto and Montreal, and between Calgary and Edmonton. The various consulting firms and consortia which conducted these studies played into the EcoTrain narrative argument that building such trains would bring about more sustainable transportation systems in Canada’s busiest corridors. Nevertheless, the investments never went forward. As implied above, for HSR to come to fruition in a roll-out neoliberal context, the investment would need be seen by decision-makers as a fiscally responsible choice, which is to say that spending would have to result in net growth in domestic product, incorporated within broader debt and subsidy reduction strategies and not

negatively impact the 'level playing field' of the transport market. Despite the best efforts of Ecotrain proponents to appeal to such logics, a Zerotrain narrative continued to dominate the political spaces where decisions on investment were made.

**PART III:
HIGH-SPEED RAIL AS AN 'ECOLOGICAL FIX'**

CHAPTER EIGHT: High-Speed Rail's Limited Socio-Ecological Potential

“[High speed trains] have a beneficial impact on the environment through the substitution of air and road transport. But they can be presumed to have a negative environmental effect through their contribution to long-term expansion of total transport demand.”

- John Whitelegg, Staffan Hultén, and Torbjörn Flink (1993, p.16).

HSR is considered more efficient and less environmentally damaging than air or road transport. The truth in both arguments rests heavily on the volume of demand of the affected corridors and several key local conditions, such as the degree of airport or road congestion, the existing capacity in the conventional rail network, values of time, travel distance, construction costs, or the source of electricity generation and the proportion of urban areas crossed by the trains (de Rus 2009, p.26).

Introduction

As demonstrated in Part Two of the thesis, the Ecotrain narrative of HSR, which claims that the technology is a ‘sustainable alternative’ to automobiles and airplanes, emerged in the late 1980s and then became increasingly popular after the turn of the Century, competing with the Zerotrain narrative for political legitimacy. This chapter examines how the arguments and assumptions inherent to the growing Ecotrain narrative typically constitute an ‘ecological fix’ – a neoliberal tactic, employed by states and capitalists in search primarily of profit, wherein innovations are proposed as a means of externalizing and internalizing socio-environmental conditions. The chapter further critically evaluates the socio-ecological claims of both the Ecotrain and Zerotrain narratives (though primarily the former) by viewing HSR from a macro-structural scale and considering the expected impacts of development as contextualized by the underlying political economy. While it finds that claims made about HSR’s reduced socio-ecological footprint are more

compelling in the specific case of the QWC than in the CEC (mostly by virtue of higher forecasted diverted demand and ‘greener’ forms of electricity generation found in the former corridor), an EPE critique of HSR nevertheless raises points of caution for Canadians in terms of the general socio-ecological contradictions involved in a neoliberal model of HSR development which is fundamentally dependent on the requirement of growth. The chapter argues that both the Ecological Modernization underpinnings of the EcoTRAIN narrative and the ‘business-as-usual’ Promethean underpinnings of the ZeroTRAIN narrative are equally problematic in failing to truly address the unsustainable foundations of Canada’s transportation system.

A Specific Type of Spatial Fix

As explained in Chapter Two, critical geographers see contemporary capitalism as a cyclical process driven by an insatiable desire to accumulate capital (Harvey 2001). In broad terms the accumulation of capital is captured within the state’s desire to continually generate economic growth (in part by enabling opportunities for private entities to earn profits, although there are indeed variations in theories of the state’s role in facilitating this process; see Brenner et al. 2010). Within a capitalist society, then, an infrastructural project such as high-speed rail typically emerges as part of a strategic process to generate growth and create opportunities for profit. As shown in Part II of the thesis, the specific ways in which growth was predominantly believed to be achieved have changed over the decades as different prevailing political economic beliefs have surfaced, competing with one another for political legitimacy. The role of the ‘state’ in this process has been one of the primary points of contention. In Canada, the dominance of roll-back neoliberal theories in governing circles led to a ZeroTRAIN mentality in which adherents were

unconvinced that HSR projects were profitable growth-inducing enterprises; at the very least decision-makers did not see that the risks of investment were worth the inevitable costs, hence the projects were never approved. However, proponents of other narratives – Turbotrain and Ecotrain, for instance – did see growth-inducing opportunities in HSR development (albeit preferring different business models). The envisioning of HSR in Canada has thus often constituted a ‘spatial fix’ – a proposed method of creating the opportunity for capital accumulation by innovating on the need and mechanisms through which everyday processes (in this case intercity transportation practices) are carried out (Harvey 2001). Further, the emergence and subsequent popularization of the Ecotrain narrative after the 1980s refashioned the particular dimensions of this spatial fix. While the Turbotrain narrative had primarily defined HSR’s ameliorating features in social terms (for instance, the reduction of highway and airport congestion and related problems such as accidents and lost time, and the ability to travel between cities more frequently, more safely, and with greater ease, etc.), the Ecotrain narrative turned to a rhetoric of ‘sustainability’ in its interpretation of how HSR was going to ‘fix space’. This shift qualified HSR, as envisioned by the Ecotrain narrative, as a particular type of spatial fix – an ‘ecological fix’ – wherein the proposed technological innovation was specifically purported to address a variety of social and environmental problems, in particular domestic fossil fuel consumption and its related climatic and health impacts.* As various critical scholars have argued (Swyngedouw 2010; Castree 2008; Bakker 2009), it is

* Air pollution resulting from fossil fuel combustion is responsible for problems such as urban smog, and in Canada is the cause of thousands of cases of premature mortality and higher rates of illnesses such as asthma (Health Canada 2013).

important to recall the underlying purpose of any spatial fix, ecological or otherwise; that is its primary aim of generating new opportunities for growth. This is why the Ecotrain narrative advocated a market-oriented structure for HSR development, and emphasized the role of private capital in pursuing what were deemed to be commercially profitable projects.

According to such logics, HSR can lead to economic growth in a number of different ways, but of particular import is the generation of new levels of transport demand. This is considered economically beneficial because it means that the intercity transport market is expanding, more passengers are travelling between urban areas (and thus purchasing tickets), operators are bringing in higher revenues, governments are acquiring more tax dollars, and additionally, a great deal of spinoff effects are accruing from a higher level of interconnectivity between urban areas and the agglomeration of the region into a contiguous economic zone (TEMS 2008; Florida 2010; Chen 2013). After the introduction of HSR lines, public events which once seemed feasible only locally are expanded to regional feasibility – which results in increased mobility between connected cities (Pagliara & Preston 2013).^{*} As a representative of Bombardier has suggested by

^{*} Models of induced demand typically focus on additional traffic created for the new mode itself. In other words, the expected volume of traffic is calculated for existing modes; then models determine how many trips would be made by the new mode, and additional calculations determine how many of the new mode's journeys would be derived from 'diversion' (people switching from existing modes), and how many would be 'induced' – new trips that would not have happened without the new mode's introduction into the system. However, because of the complexity involved in transportation systems it is nearly impossible to determine induced demand on *existing* modes from a given change to the system. In other words, how many new trips would take place by automobile, air, etc., that would not have happened without the introduction of HSR. As Pagliara and Preston point out, the general tendency is that any kind of added capacity to a transport system typically *does* result in induced demand at other levels of the system: "improvement within the supply sub-system, such as the introduction of a new road infra-structure, of faster/cheaper services, more comfortable vehicles, or in any case actions that increase the utility and/or the

way of example, with a high-speed link between Toronto and Montreal, it would thereafter be feasible for a resident of one city to travel to the other for a hockey game after work, with enough time to return home after the game (Bombardier Transportation 2013). The added transport connection thus creates nodes of additional economic activity; as Alberta High-Speed Rail explains, “if you compare a non-high-speed rail corridor to a high-speed rail corridor, the level of [economic] activity in the high-speed corridor is about 15-20% higher... because people can come from a wider area and do all kinds of things that they can’t do today” (Alberta High Speed Rail 2013). This positive net economic impact is a requirement for HSR development in a capitalist society, which explains why both Ecotrain and Zerotrain proponents (and a considerable portion of TurboTRAIN proponents as well) only accept the legitimacy of HSR under such premises.*

Similarly, proponents of HSR development argue that it leads to economic gains through the creation of new jobs – both directly in the context of the HSR infrastructure development and operation, and indirectly through related sectors (Todorovich et al. 2011). Along the lines of the latter, Alberta High-Speed Rail points out that HSR investment “contributes to job creation because what you’re doing is you’re making the three cities in the corridor into one economic unit” (2013). With HSR linkages, the argument goes, workers can also think realistically about living in one region and

satisfaction of the customer about the possibility of moving, create a new share in travel demand” (2013, p.45).

* Recall, Zerotrain proponents are not necessarily *against* the idea of HSR – what they dislike is (what they see as) the likely requirement of state financing and regulation involved in HSR development. Some TurboTRAIN proponents (those of the Critics coalition in particular) meanwhile, are more willing to forego the economic benefits for social or environmental gains.

working in another, as well as using the train itself as a temporary moving office space (at least certain types of businesspeople or mobile workers), thanks to the increasing prevalence of wireless internet and other mobile communications technologies.*

Of course, just because proponents of HSR advocate the introduction of the technology as part of a strategic effort to generate growth, it is not necessarily the case that their predictions of profitability will come true. As shown in Chapter Four, there is a considerable amount of debate on this point, and thus far (throughout the three periods of HSR development considered above) governments have consistently found that the growth argument was not compelling enough to warrant further action. In short, the creation of economic benefits does not necessarily mean that the value of those benefits outweighs the costs. After all, an HSR project is a phenomenally expensive project. Characteristic of this skeptical viewpoint, Flyvbjerg et al. have pointed out how large infrastructure projects throughout the industrialized world tend to produce cost overruns and often fail to yield the originally stated benefits:

“At the same time as many more and much larger infrastructure projects are being proposed and built around the world, it is becoming clear that many such projects have strikingly poor performance records in terms of economy, environment and public support. Cost overruns and lower-than-predicted revenues frequently place project viability at risk and redefine projects that were initially promoted as effective vehicles to economic growth as possible obstacles to such growth” (Flyvbjerg et al. 2003, p.3).

* The ability to use mobile devices while in a land-based vehicle offers a competitive advantage over air travel or taking to the wheel of an automobile, though certainly airlines are attempting to compete with trains on this front, with many airlines now offering wireless internet on flights. However, as McCartney (2009) reports, the pay-per-use internet typically featured on airlines is far less of a draw than free wifi (currently offered on VIA and some intercity bus lines).

Skeptics take this point further to suggest that HSR lines in most cases require continued financial support of some kind during the operation phase. As Feigenbaum writes, “from a financial standpoint, only two HSR lines in the world are profitable: Paris-Lyon in France and Tokyo-Osaka in Japan. A third line, Hakata-Osaka in Japan, breaks even. The majority of high-speed rail lines require large government subsidies from both general taxpayers and drivers” (Feigenbaum 2013, p.3).

As a result of this debate on the merits of HSR’s growth-inducing potential the manifestation of HSR-as-ecological-fix has largely remained at a conceptual level. Actors more inclined to the Ecotrain narrative (which typically includes the firms which have conducted feasibility studies) have portrayed HSR as a growth-inducing enterprise, while governments approaching from a Zerotrain narrative have expressed skepticism about the growth potential. For instance, while the Van Horne Institute noted in 2004 that “sufficient demand exists *today*” for HSR in the CEC, (Van Horne Institute 2004, p.vi, emphasis in original), a finding that was backed up by a 2008 market assessment (TEMS & Oliver Wyman 2008), a governmental review of the same project initiated in 2013 found that there was still *insufficient* demand to warrant the high costs of development (Henton 2014a; Standing Committee on Alberta’s Economic Future 2014).

Within the context of Zerotrain’s dominance in political circles, proponents of HSR have thus had to put an *economic* value on the consequent social and ecological impacts of HSR investment. The surface-level language proponents use about revitalizing railways, reducing congestion, improving safety and reducing environmental degradation, etc. (see de Rus 2009, p.170), are all moot points according to Zerotrain adherents if the *value* of such improvements do not match the financial costs. Following this line of

reasoning, the firms which have conducted cost assessments of HSR in both the QWC and the CEC have, for the most part, foretold of long term economic gains associated with the projects (with the caveat that in the QWC the line does not extend Southwest of Toronto; see EcoTrain 2011; Shirocca Consulting & Anthony Steadman & Associates 2011).^{*} The expected social and environmental benefits have also been assigned a financial value so as to help the business case under a CBA. For instance, the 2011 EcoTrain study calculates that introducing an electric 300 km/h HST in the QWC would result in a net reduction of 2.02 Megatonnes of Carbon Dioxide equivalent (Mt CO₂ eq) over the 30-year life of the project, which it values at \$80.7 million (in addition to \$15.3 million for other air pollutants).[†] Meanwhile, using a similar technological scenario, the Van Horne Institute predicted a savings of 3.1 Mt CO₂ eq over 30 years (2004), with the financial value of emissions later updated by Shirocca & Anthony Steadman (2011) at \$136 million in net present value terms[‡] (see Table 8A).

As shown in Chapter Three, the Net Present Value (NPV) of investments has been an essential indicator for decision-makers wanting to know if the benefits outweigh the costs. As Table 8B shows, a broad range of “consumer surplus” benefits were calculated

^{*} The findings of the EcoTrain report were criticized by the mayors of Windsor, Sarnia, Chatham and London, who felt their municipalities would be left out if the study’s recommendations were followed (see CBC News 2011).

[†] While the 2011 study does not offer a hard figure for the expected net reduction in the region’s GHG or CAC emissions, it is possible to extrapolate a figure from the final report’s expected annual savings.

[‡] Originally, the Van Horne Institute based its calculation on an assumed global market value of \$75 per ton of carbon dioxide equivalent saved. The value here is extrapolated from the 2011 update by Shirocca & Anthony Steadman, which showed a 39% inflation rate for other financial indicators.

by EcoTrain for a proposed HST in the QWC, accrued from the value of spending less time travelling and more convenient travel options, valued at \$2.7 billion (2011 dollars).

Table 8A: The Value of Emissions Savings, QWC & CEC

Cost of Investment	NPV of Air Emission Savings	Claimed Reduction of CO ₂ eq.
<i>EcoTrain Scenario: QWC Bullet Train (300 km/h; 30 year project; 2009\$)</i>		
\$21.3 billion	\$80.7 million (GHGs) \$15.3 million (CACs)	2.02 Mt
<i>Updated Van Horne Scenario: CEC Bullet Train (300 km/h; 30 year project; 2011\$)</i>		
\$4.75 billion	\$136 million (GHGs)	3.1 Mt

Sources: EcoTrain (2011); Van Horne Institute (2004); Shirocca & Anthony Steadman (2011).

Similarly, the expected increase to ‘public safety’ brought about by HSR was valued at \$2.5 billion (EcoTrain 2011). Meanwhile, in the CEC, a range of ‘public benefits’ of this sort* were valued at \$2.6 billion (Shirocca Consulting & Anthony Steadman 2011). Nevertheless, while the NPV of the entire project in the CEC was positive overall – totaling \$8.5 billion over the course of the project – the value of the entire project in the QWC was found to be negative overall, at -\$992 million.† Despite the evidence promoted by EcoTrain proponents of the positive net present values for both the CEC and portions of the QWC, decision-makers held to their Zerotrains beliefs, displaying either skepticism about the figures or an ideological belief that it was not the state’s role to initiate such growth-inducing projects.

* The Van Horne Institute refers to ‘public benefits’ as “travel time and cost savings for system users, accident reduction and environmental benefits” (2004, p.xiii).

† As noted above, EcoTrain found the portion of the corridor between Toronto and Québec City to be financially viable.

Table 8B: The Net Present Value of Social Benefits, QWC & CEC

Cost of Investment	NPV of Social Indicators	NPV of Entire Project
<i>EcoTrain Scenario: QWC Bullet Train (300 km/h; 30 year project; 2009\$)</i>		
\$21.3 billion	\$2.7 billion: 'Consumer Surplus' \$2.5 billion: 'Public Safety'	-\$992 million
<i>Updated Van Horne Scenario: CEC Bullet Train (300 km/h; 30 year project; 2011\$)</i>		
\$4.75 billion	\$2.6 billion: 'Public Benefits'	\$8.5 billion

Sources: EcoTrain (2011); Van Horne Institute (2004); Shirocca & Anthony Steadman (2011).

Reacting to Unsustainability: Selling the Ecological Fix

While both Zerotrains skepticism and the EcoTrain response have been guided by underlying economic motivations, the latter narrative has primarily been framed as a reaction (or 'solution') to the broader societal problem of 'unsustainability' within the transportation system. The latter characterization of 'unsustainability' has been leveled at Canada's transport sector from a wide spectrum of actors; even the federal government has acknowledged transport unsustainability numerous times, which it claims mostly stems from inefficiencies within the dominant fossil fuel modes (see, for instance, Environment Canada 2002; Transport Canada 2009).

In Canada, fossil fuel dependent automobiles and airplanes together account for up to 97% of the nation's intercity travel. Automobile traffic accounts for 92.6% of domestic trips, while the air mode accounts for nearly 3% of domestic intercity trips. Since 1990 the overall trend in air transport has been one of growth, with the number of passengers growing each year (with the exception of the year following the 2008 financial crisis), reaching over 33.8 million domestic passengers by 2011. Further, the outlook until 2025 suggests that the number of air passengers in Canada will grow on average by 3% each year (Statistics Canada 2013c; Transport Canada 2012a). Meanwhile, the overwhelming dominance of the automobile has totally reconfigured the

geographical and demographic evolution of Canadian cities and the society's mobility relations. This has created a car-based culture of 'automobility' (Paterson 2007) which structurally favours and reifies the dominance of cars in a cyclical manner. Critics view such trends and trajectories as inherently unsustainable, given the existing ecological footprint of today's mobility practices. For instance, the climatic impact of the transport sector is a particular scourge on the Canadian record; despite having less than 0.5% of the world's population, the nation produces 2% of global emissions of GHGs. The transport sector plays a bigger role in Canada's emissions (at 24% of the total) than any other economic sector, including oil and gas development (23%), electricity generation (13%), or agriculture (10%) (Environment Canada 2013). While the transport sector's emissions grew by 31% between 1990 and 2005, "driven by a strong period of economic growth and low oil prices," long overdue improvements in efficiencies of automobiles and a sharp economic decline in 2008 kept the sector's emissions stable (Ibid. p. 15). While eco-modernists would see 'emissions intensity' gains of this sort as a sign of 'success', as evidence that processes of growth can indeed be 'decoupled' from their ecological impacts, critics challenge the extent of efficiency gains and question the true social value of growth in the first place (see Victor 2008).

Intra-urban and intercity traffic in both the QWC and CEC is projected to grow as the populations of Alberta, Ontario and Québec are all expected to increase significantly over the next three decades. Ontario's population is expected to grow by 28.6 per cent between 2012 and 2036, with the GTA seeing the fastest rate of growth, at nearly 40% (Ministry of Finance, Government of Ontario 2013). Meanwhile, the population of Québec is expected to grow by 17% between 2006 and 2056 (Ouranos 2014). Most

impressively, in Alberta the population is expected to more than double between 2013 and 2041, with growth expected to be “even more concentrated in urban centres, especially along the Edmonton-Calgary corridor” (Alberta Treasury Board and Finance 2013, p.1). Without any financial or regulatory disincentives to travel, intercity transport demand is expected to increase merely by virtue of larger populations (see TEMS & Oliver Wyman 2008). We must then consider the possibility that this growth will result in the exacerbation of socio-ecological impacts associated with automobile and air travel (increased road accidents, highway congestion and crowded airports, smog, road degradation, and of course more GHG emissions).

For capitalists, the need for an ecological spatial fix is apparent from this scenario. Nevertheless, whereas the Promethean attitude (Dryzek 2013) most popular with the Zerotrains camp enables a ‘business-as-usual’ approach to this problem, in which it is assumed the markets will inevitably promote more environmentally-friendly behaviour and produce their own technological solutions, the EM-following Ecotrains camp calls for a more active governmental effort to help introduce new technologies to solve the problem. In either case, by building electric high-speed trains that will compete in an open market with automobiles and airplanes, it is suggested that the impacts of transportation growth can be internalized by diverting traffic that would otherwise be taken up by automobiles and airplanes. In the process, a conversion to a more ‘sustainable’ method of transport is achieved and profits are accrued. Characterizing this viewpoint is AHSR’s claim that a train between Calgary and Edmonton would “save 150 tonnes of greenhouse gases a year” because it uses less energy than the dominant modes

from which it is diverting passengers, all while creating 236,000 person years of employment and net gains for the Alberta economy (Alberta High Speed Rail 2013).

Two Core Assumptions

In proposing HSR as a technological eco-fix, two related core assumptions are typically made: The first is that high-speed trains are more efficient users of fossil fuel energy on a per passenger basis than automobiles and airplanes. The second is that the primary mechanism through which HSR foments ecological change is that of changing the modal distribution. The following statement in the TEMS & Oliver Wyman study of the CEC is characteristic of these two assumptions together: “The implementation of a new high-occupancy mode of transport like rail has the effect of lessening emissions because of diversion. The diversion of travelers to rail from the auto, air and bus modes generates emissions savings. For the Alberta HSR, we have used the assumption that the emissions savings are proportional to the number of diverted vehicle miles” (2008, p.34). As examined in the next section, there are numerous reasons why both of these assumptions are problematic, telling only one part of what is inevitably a larger complex story. However, let us first examine these assumptions in more detail.

Regarding the first assumption, the relative efficiencies of different modes are typically calculated using an array of factors for each mode. For instance, in their calculation of the average emission factor of various modes (Table 8C), the Center for Clean Air Policy (CCAP) and the Center for Neighborhood Technology (CNT) make assumptions about which HSR technologies are most typically used (or *likely* to be used) in a North American context, average vehicle load factors, model years, alignments, trip length, and a number of additional factors (CCAP & CNT 2006, p.11). Based on this

large array of factors, the groups claim that the typical ‘North American’ HST would produce about half the amount of CO₂ per passenger than automobiles, and 40 percent of the emissions of airplanes (the study solely looks at CO₂, not other GHGs).

Drawing on this type of analysis showing less fuel used *per passenger kilometer*, Ecotrain narrative proponents claim that there are less emissions of greenhouse gases (GHGs) and criteria air contaminants (CACs) overall when traffic is diverted from cars and airplanes to HSTs. While buses and conventional trains may use even less energy per passenger than HSR, the latter has the added benefit of being able to match or even surpass the travel times associated with the dominant modes, an essential component in diverting traffic in a competitive market economy.

Table 8C: Comparison of Average GHG Emissions by Mode

Mode	Emissions Per Passenger		Passengers per Vehicle ^a
	lbs CO ₂ /mile	grams CO ₂ /km	
Bus	0.14	40	35
Conventional Rail	0.21	59	322
High Speed Rail	0.26	73	97
Automobile	0.53	149	1.6
Airplane	0.62	175	77

Source: CCAP & CNT (2006).

An example of this Ecotrain narrative in a Canadian context was showcased in an infographic found in *The Walrus* in 2009 as part of a segment titled “Off the Rails: How Canada Fell From Leader to Laggard in High-Speed Rail, and Why That Needs to Change” (Paulsen 2009a). It is interesting to note that whereas CCAP and CNT had

^a CCAP and CNT assume an average occupancy ratio of 70% for each vehicle using ‘average’ or ‘typical’ vehicles in a North American context.

calculated HSR to be *twice* as efficient as automobiles, the analysis in *The Walrus*, which used the CEC as a hypothetical case study, claimed HSR to be 13 times more efficient than automobiles and 15 times more efficient than airplanes (see Table 8D).

Table 8D: Hypothetical Modal Comparison in the CEC

	Average Fare (\$2009)	Travel Time	CO ₂ eq. /passenger/km
Car	\$42-126	3.5 hours	130 grams
Airplane	\$138-164	3.25 hours	150 grams
High-Speed Train	\$97-115	2.5 hours	10 grams

Source: Paulsen (2009a).*

The discrepancy between these values indicate how much of a difference is made when the assumed factors in the equation vary; one main reason for the difference between the HST emission intensity values is that the analysis in *The Walrus* assumes an electric traction HST and does *not* consider the emissions of GHGs at the source of electrical generation, whereas the study by CCAP & CNT uses a Danish diesel-electric HST model called IC-3 as the archetypical North American HST which does not run on electricity at all.† A second reason is that the CEC case study offers a comparison of a specific journey

* All figures in the table are extrapolated from a comparative analysis of the 300 km trip and displayed in an infographic designed by Rachel Tennenhouse and Paul Kim, researched by Katie Addleman, and found in Paulsen (2009). Both air travel and bullet train estimates include travel to and from the airport/train station to downtown. The CO₂ equivalent figure for High-Speed Trains does not appear to incorporate the emissions generated at the source of electrical generation.

† CCAP and CNT use the Danish IC-3 because, it claims, it is the most likely HSR technology to be used in North America. In comparison they find that a TGV-type HST would produce only 0.15 lbs of CO₂ per passenger mile (or 42 grams of CO₂ per passenger kilometer). This calculation, in turn, assumes an emission factor of 1.4 lbs of CO₂ per kwh (or 635 grams of CO₂ per kwh) from electricity production, which is based on a forecasted average emission factor for electricity production in the US in the year 2025. The latter value varies significantly by the type of fuel used to generate electricity. In Ontario, the 2013 average emission intensity was roughly 80 grams of CO₂ per kwh thanks to considerable amounts of nuclear energy production (Aplin 2014). In Alberta the average (in 2012) was 880 grams of CO₂ per kwh thanks to large amounts of coal-fired electricity production, while in Québec it was just 2 grams of CO₂ per kwh, a result of mostly hydro-electric power generation (Alexander 2012).

from ‘door to door’, whereas the CCAP & CNT focuses on the average amount of energy used to propel a given mode at a given moment of a trip. Nevertheless, the differences in values serve as a reminder of how such factors shape the final analysis.

Cross-comparisons of modes tend to acknowledge that the emissions generated at the source of electricity production *should* be incorporated in the final analysis, yet some have not taken this important extra step.* For instance, the Van Horne Institute acknowledges that “more than 60 percent of power generated today in Alberta is derived from burning coal” (Van Horne Institute 2004, p.110), and yet the study does not include this factor in its calculation of the overall amount of GHGs reduced from introducing an electric HST. For its part, the EcoTrain report (2011) does include electrical generation within its calculation of GHG emissions produced by HSTs. However, neither it nor the Van Horne Institute include other factors such as the fossil fuels emitted in the process of infrastructure construction in their overall assessment of HSR’s emissions reductions potential, thus further contributing to the Ecotrain narrative’s assumptions about HSR’s relative efficiencies. These pitfalls and others are discussed further below.

Regarding the second assumption, the Ecotrain narrative tends to focus its ecological impact analysis very narrowly on how introducing HSR reshapes the modal distribution. While sometimes proponents depict a fixed system wherein newly introduced HSTs are merely diverting traffic away from existing automobile and airplane

* Including the emissions generated at the source of electricity production offers a more detailed picture of the full emissions profile of electric traction HSR operations, yet it is not a complete ‘well-to-wheels’ comparative analysis. The latter would involve also considering the emissions generated in *producing* the fuel used by cars and airplanes, or the energy used to produce the fuel used to create electricity (in the case of Alberta, for example, this would involve considering the energy used to produce the coal which is burned to generate electricity).

traffic,* feasibility studies have typically been much more nuanced in describing how HSR is likely to result in *induced demand* as well – additional traffic generated by the introduction of a new mode into the system which otherwise would not have occurred. The TEMS & Oliver Wyman report suggests that the number of intercity passengers in Alberta will triple by 2051 *without* the introduction of HSR. If no new capacity is added to the intercity transport infrastructure, the study argues, unbearable congestion will result. There are nevertheless problems with this narrow view of the transport system, as it fails to account for a broad range of externalities that would likely be generated from HSR beyond the particular modal split, or which may effect modal distribution in unexpected ways; and further because it takes a particular future political economic context for granted.

Problematic Assumptions

Both of the core assumptions made about HSR’s socio-ecological potential are problematic when considered from a macro-structural scale of analysis [considering energy, political economic and social systems at large – an approach advocated by York & Rosa 2003; Davidson and Frickel 2004; and EPE in general (see Chapter Two)]. First, as I argue here, it is not necessarily the case that electric HSTs use fossil fuel energy more efficiently on a per passenger basis – the context matters, in a number of dimensions. Second, I examine how the impacts of introducing HSR are complex and

* For instance, Green Party leader Elizabeth May has claimed that HSR “will take cars off the roads and reduce air travel between major cities, reducing our national greenhouse gas emissions and congestion on our highways” (quoted in Green & Wu 2011).

extend beyond the system in which they are introduced; that system is thoroughly dynamic and riddled with uncertainties, which makes claims about HSR as a ‘sustainable’ mode of transportation tenuous.

HSR’s Relative Efficiencies

A primary issue with the assumption that electric HSTs are more efficient than automobiles and airplanes is that inevitably, any vehicle’s relative efficiency will be shaped by the operating conditions, in particular the occupancy ratios. In short, when vehicles are full, the efficiencies are greater per passenger. In Canada, the average occupancy of cars and light trucks increased to 1.7 passengers per vehicle in the years preceding 2012 (Transport Canada 2012a). The airline industry also made gains in passenger load factors since the mid 1980s, reaching an average load of over 80% in 2011 (Tretheway 2013). Passenger rail also increased its load factor, though it nevertheless only sits at 52% (The Canadian Press 2013b).^{*} By inflating the expected load factors for HSR, and deflating the expected load factors for other modes, the final analysis of emissions per passenger can be totally altered. It is not argued here that numbers have intentionally been skewed in this manner; rather the intention is to identify how upward and downward pressure on load factors alone can have a substantial impact on the findings of HSR’s relative efficiency. For its part, the EcoTrain study assumes a

^{*} Within the busy QWC, the average load factor was at 59%. The busiest segment of the corridor was Montréal-Ottawa-Toronto, with an average load factor of 63%. VIA’s long distance voyages (from Montréal-Halifax, and Toronto-Vancouver) were even more full – averaging 65% occupancy (VIA Rail 2014a). The latter figure is somewhat deceiving as a figure for energy calculations, however, because on long distance journeys VIA uses numerous sleeper cars which have less seats than economy cars. This means a large train car with few seats could still have a high occupancy ratio and equally yield a high carbon intensity (on an emissions per passenger kilometer basis), when usually higher occupancies equate with lower emissions per passenger kilometer.

load factor of 85% for its proposed HSTs during regular peak hours, climbing to 95% during high-season Fridays, which does seem high given the existing load factors in Canada for passenger rail of just over 50%, noted above. The Van Horne Institute, meanwhile, assumes lower than average occupancies for automobiles and airplanes in its calculations (1.25 passengers per vehicle for automobiles and 52% load factors for airplanes), which seem low compared to the values interpreted by Transport Canada, noted above. The number of variations is infinite, but the point is that HSR's presumed greater efficiency relies on the manifestation of high rail vehicle occupancies. Given the prominence of car culture in the CEC, Siemiatycki expects HSTs would have trouble yielding such high occupancy rates in that corridor (Standing Committee on Alberta's Economic Future 2014).

A second problem with the first core assumption has to do with the environmental impacts of infrastructure construction. Where HSR is a newly introduced infrastructure requiring construction, the mode's efficiency gains are negatively influenced by losses during the construction process. As Campos and de Rus point out in their comparative assessment of the world's HSR lines, "both the construction of high-speed [rail] infrastructure and the operation of services produce environmental costs in terms of land take, barrier effects, visual intrusion, noise, air pollution and contribution to global warming" (Campos & de Rus 2009, p.25). To many transport analysts who have reviewed the impacts of introducing HSR as an *additional mode* (see, for instance, Whitelegg & Holzapfel 1993; Westin & Kågeson 2012; Miyoshi & Givoni 2012; Åkerman 2011; de Rus & Nombela 2007), it is typically understood that the result will be an *increase* in net energy use (and thus emissions). Part of the reason is that it takes a lot

of energy to build the necessary viaducts, bridges and dedicated tracks, not to mention the rolling stock, which when weighted against the gains made over the life of the project, are significant. For instance, Miyoshi and Givoni argue that for the London-Manchester route in Great Britain the emissions from the construction phase have been underestimated and are substantial enough to offset later gains during the operations phase of the project (Miyoshi & Givoni 2012).

Based on the International Union of Railways' figures on the emissions of CO₂ produced per kilometer of constructed HSR line (Jehanno et al. 2011), the construction of the infrastructure would be relatively small for both the CEC and the QWC, but would nevertheless add to the equation of net impacts. Using these figures, construction would produce between 51 to 260 Kilotonnes of CO₂ in the CEC (which is a relatively small amount in Albertan terms – equivalent to far less than 1% of the province's annual emissions), and a range of 560 Kt to 1.7 Megatonnes of CO₂ for the QWC (equivalent to around 1% of Ontario's annual emissions, or 2% of Québec's emissions).^{*} Maintenance, disposal, and of course operation also require energy use, which is also typically not incorporated in the final consideration of environmental changes brought about through the introduction of HSR, though as the IUR points out, the impact of maintenance and

^{*} The IUR's figures range from 58 tonnes to 176 tonnes of CO₂ per km of line and year. As the CEC's electric line would be of a distance of 294 km (Van Horne Institute 2004), and the QWC a distance of 1200 km, this would result in a range of 17 Kt to 52 Kt of CO₂ emitted per year of construction in the CEC, and 70 Kt to 211 Kt of CO₂ emitted per year of construction in the QWC. EcoTrain estimated that of about a 14-year implementation range for HSR in the QWC, 8 years would be required for construction (so the range grows to 560 Kt to 1.7 Mt), while the Van Horne Institute estimated a 3-5 year construction phase in the CEC (thus, the range grows to 51 Kt to 260 Kt).

disposal for HSR is usually lower than the relative amount per passenger for automobiles (Jehanno et al. 2011).

A third problem challenging HSR's stated relative efficiency relates to the generation of electricity to power the mode, as identified above. This impact varies significantly by region, due to variations in the methods of generating electricity. Much of Alberta's electricity (65%) is produced from coal-fired plants, and a further 15% from combustion turbines (which burn natural gas or oil; see Canadian Electricity Association 2013). As such, fossil fuels would still be used to indirectly power the HSR in that province, and the introduction of electric trains would merely displace emissions from the transport sector to the power supply sector. We can recalculate the expected value of diverted emissions in the CEC using AHSR's claim that a new HSR link would use an additional 0.2 Terawatt hours (TWh) of electricity generated by the province each year (Crawford 2014). Given this figure, we can infer that over the 30-year life of the project an HSR line would produce 5.3 Mt of CO₂ eq just to power the trains (if the province does not 'green' its electricity sector).^{*} Now compare this figure to the 3.1 Mt CO₂ eq that the Van Horne Institute found would be *saved* over the life of the project from diversion – when it did not calculate emissions from power generation (Van Horne Institute 2004, p.110). What this effectively means is that in incorporating emissions from electrical generation an HSR project in the CEC would actually result in a net *increase* of GHG

^{*} Using the 2012 value of 880 grams of CO₂ eq per kwh in Alberta (Alexander 2012), we can infer that one TWh produces 0.88 Mt of CO₂ eq. This suggests a value of 0.18 Mt of CO₂ eq emitted to produce electricity for HSR *each year* in Alberta, or 5.3 Mt of CO₂ eq over the course of the project.

emissions of 2.2 Mt of CO₂ eq. Further adding the impact of construction (up to 0.26 Mt of CO₂ eq, as calculated above) brings the value up to 2.46 Mt of CO₂ eq.

In the QWC, the emissions from power generation *were* taken into account in the EcoTrain study’s final calculations. This means that the calculated emissions savings from diversion *minus* emissions from the generation of electrical capacity would still net an overall decrease of 2.02 Mt of CO₂ eq over the 30 year life of the project. However, when one then subtracts the emissions from construction (up to 1.7 Mt of CO₂ eq, as noted above), the final equation yields a net savings of only 0.5 Mt of CO₂ eq (see Table 8E). While better than the CEC’s negative savings, this figure is such a relatively minimal amount in net terms (equivalent to less than 0.1% of Canada’s *annual* emissions), that it raises serious doubts regarding the socio-ecological impact of HST development, particularly when considering the required expense of billions of dollars and the 30 year time frame required for such savings.

Table 8E: Re-evaluation of Emissions ‘Savings’* for a 300 km/h Electric HST†

Corridor	Net GHG ‘Savings’	Project Life	Annual ‘Savings’
QWC	0.5 Mt	30 years	16.6 Kt
CEC	-2.5 Mt	30 years	- 83.3 Kt

In short, it is dangerous to assume that HSR is a ‘cleaner’ mode of travel simply because it runs on electricity; the context of power generation and infrastructure development are important to consider as well. For Kågeson, who has studied the net life-

* Negative values mark a net increase in overall emissions.

† Using a basic equation of expected emissions savings from diversion, minus the impacts of electrical generation and infrastructure construction.

cycle energy usage associated with the installation of new HSR lines throughout Europe, the answer is that these additional impacts inevitably result in environmental costs which negate or even surpass the purported gains: “Marketing high speed rail as a part of the solution to climate change is clearly wrong... [Instead] the principal benefits of high speed rail are time savings, additional capacity and generated traffic, not a reduction of greenhouse gases” (Kågeson 2009, p.2). While HSR is more compelling in socio-ecological terms in the QWC than in the CEC – a result of the higher levels of low carbon electricity production in Ontario and Québec – the relatively minimal gains over the long project timeframes suggests that in both corridors the sustainability argument is overstated.

A Narrow Focus on Mode Redistribution

The second main assumption about HSR’s socio-ecological potential – that the primary locus of ecological change brought about from introducing HSR is that of redistributing the market share of each mode in the system – is also problematic. As the following paragraphs argue, there are a number of additional ways in which the introduction of HSR could yield environmental changes *beyond* simply the expected diversion of traffic. When viewed from a macro-scale, the system in question is dynamic, complex and characterized by a high degree of uncertainty.

By way of a first example, this uncertainty is highlighted by the question of ‘induced demand’ (trips that would not have happened without its introduction). As showcased above, Ecotrain proponents typically assume that adding HSR capacity merely diverts passengers from existing modes to the new mode, failing to account for the very real likelihood of induced demand (see, for example, Green & Wu 2011). And

while feasibility studies *have* typically considered the extent to which the introduction of a new mode inevitably creates *its own* additional demand, the studies have *not* included estimates of demand induced for the *existing* modes due to the introduction of the new mode into the system. To illustrate the point, consider the additional air travel that would be generated external to the corridor as a result of the introduction of HSR. While it is highly likely that there will be some movement from air to rail *within* the corridors (as the feasibility studies expect), in places where HSR creates more effective links for passengers to airports (even indirectly), one outcome could include induced air travel, particularly *beyond* the rail corridor (Gardiner 2013). In Germany, for instance, cooperation between Lufthansa and Deutsche Bahn has led to passengers being able to book part of their trip (to or from Stuttgart or Frankfurt airports) through the airline, while the actual travel is completed by HST. This is an arrangement in which the airline has been happy to participate thanks to higher rates of travel outside of the rail corridors in which Deutsche Bahn operates (Jehanno et al. 2011). Transport geographers like Whitelegg have thus warned against the diversion argument behind HSR:

HSR is promoted as something that can sort out nasty carbon-producing aircraft on domestic routes. It has done this on the Paris-Lyon and Madrid-Seville lines, but this ability to trash a single air route should not be interpreted as something that can dent the growth of air travel. Germany has one of the largest HSR systems in the world, yet has seen an explosion in internal air travel (Whitelegg 2009).

Returning to a Canadian context, we must therefore consider whether the increased connections brought about by HSR could result in higher volumes of air travel from Toronto, Montreal, Ottawa, Calgary and Edmonton airports. While it is impossible to say with any certainty, this would likely be the case in the CEC, where the two airports are

identified as two of the proposed five stops along the HSR route (TEMS & Oliver Wyman 2008).

A related problem has to do with the focus on diversion from automobiles and airplanes at the expense of buses and conventional rail. Even if we accept that HSR is more efficient than airplanes and automobiles (and thus that diverted traffic from these modes could result in socio-ecological benefits), it is equally true that traffic diverted from conventional rail and buses in particular (which are known to be more efficient on average than bullet trains; see Table 8A above; or CCAP & CNT, 2006) must then be interpreted as an added environmental cost.* While there is no conventional rail service in the CEC, both Greyhound and Red Arrow offer bus services in that corridor. The TEMS & Oliver Wyman study notes that “a large share” of bus traffic would likely be diverted to HSR in the CEC (p.61). Meanwhile, in the QWC the EcoTrain study assumes that conventional rail services in the corridor would *cease* if HSR operations were implemented (p. 135). Thus in both of these cases implementation of HSR could result in unintended environmental externalities, particularly in the case of the CEC where it is believed bus traffic will largely be diverted to HSR.

Of its 2011 forecasted demand for a 320km/h HST, TEMS & Wyman suggests that 2.3% would be ‘natural’, 7.2% ‘induced’, and 90.5% ‘diverted’ from other modes

* This, of course, depends on the load factors of buses and trains. The 1992 Royal Commission on National Passenger Transportation (Hyndman 1992, p.226) found that in the busy QWC corridor, emissions of CO₂ per passenger kilometer ranged between 76 grams (for trains with 62% of seats filled) and 46 grams (for trains with 100% of seats filled). Buses ranged between 30 grams (77% full) and 23 grams (all seats filled). By comparison, the CCAP & CNT study expects an HST of the Danish IC-3 variety to emit 73 grams of CO₂ per passenger kilometer (70% full), and a TGV-style train to emit 42 grams of CO₂ per passenger kilometer (70% full).

(TEMS & Oliver Wyman 2008, pp.74–76). Meanwhile, the EcoTrain report of the QWC claims that of its 2031 forecasted demand for a 300km/h HST in primary markets, 7% would be induced,* while the remaining 93% of HSR traffic would be diverted from existing sources (EcoTrain 2011). Thus, both studies forecast major shifts *from* automobiles and airplanes *to* high-speed trains if the investments are made, *as well as* the creation of a considerable amount of new journeys. As Nash points out, “to the extent that higher speeds encourage wholly new journeys to be made, all the adverse environmental effects are of course multiplied” (Nash 1993, p.85). Further, as the TEMS & Oliver Wyman study clearly admits, “it should be noted that the diversion [of traffic from existing modes to HSR] is largely from the growth of new traffic” from expected population growth (TEMS & Oliver Wyman 2008, p.vi). In other words, a key premise of HSR is to use a new mode to absorb what is expected to be inevitable growth in transport demand, rather than use public policy or regulatory tools to curb said growth. In this sense the notion of ‘taking cars off the road’ and ‘grounding airplanes’ is largely theoretical and assumes a ‘business-as-usual’ context.

In all instances above there is a considerable degree of uncertainty. The calculations are made upon an array of assumptions about the presumed context, as well as human behaviour. This relates to a second core problem with the assumption that the effects of adding HSR capacity will yield certain types of modal shifts. The leading

* Calculations: EcoTrain suggests that by 2031, a 300km/h HSR would capture 18% of primary markets. It also says that there would be 8,836,000 person trips by a 300km/h HSR within primary markets in 2031. This means that the total volume of intercity person trips in the primary markets is 49,088,888 person trips. The report also notes that 643,000 HSR trips within the primary markets would be ‘induced’, which amounts to just over 7% of HSR ridership.

theory is that travelers internalize a value for travel and choose a mode with the best value based on the price (versus relative modes) and the length of time it takes to make the trip (in other words, the relative speed): For instance, as the TEMS and Wyman study claims, “travelers tend to value time more when their journey is for business than for a social trip. Alternatively, social travelers will frequently prefer to spend time rather than money, as they are limited by their own income, which typically means they are willing to pay less than a business” (2008). However, a case could be made that the way we value transport is much more complex, and not solely based on the price of travel or the length of the trip (as shaped by the purpose). Certainly the fares and marketing tools used by various firms to attract passengers have an impact on mode distribution, but equally important (and difficult to quantify or predict) are changing social subjectivities about intercity travel, including social understandings of the environmental impact of various modes,* mode safety, the capacity for inter-modal connectivity and overall mode access, class and fare discrepancies, and what constitutes ‘comfortable’ and ‘hassle-free’ travel. These subjective factors may allow slower modes such as buses and conventional rail to ‘capture’ former air travel or automobile demand (after all, VIA has seen growth in ridership in recent years; see The Canadian Press 2013b). At the same time, it is equally possible that the way these factors evolve may just consolidate the hold of dominant modes when a new mode is added into the system. It is problematic to assume (as contemporary feasibility studies often do) that the introduction of HSR will *necessarily*

* VIA Rail, for instance, has re-branded itself as “a green choice”, using this motto as a new corporate tag line, presumably in an attempt to woo environmentally conscious travelers.

yield the types of modal shifts expected merely because of their speed. The calculations are made on what is currently known of the competing modes, but the future of air and automobile travel is not known. Any number of scenarios could fundamentally change the equation people make when deciding what mode upon which to travel. For instance, the proliferation of electric vehicles and highway battery-charging stations could secure the dominance of automobiles, and appeal to a similar ‘eco-fix’ logic as that seen towards HSR. While Perl notes that unveiling such technologies across the system – including biofuels, fuel cells, and large batteries – would take longer than building an HSR system (in Tutton 2011), they nevertheless offer solutions which are consistent with the ‘business-as-usual’ approach advocated by the Prometheans in political office and North America’s culture of excessive automobility (Paterson 2007). Similarly, if urban transit systems fail to provide ‘satisfactory’ access to downtown HSR stations, intercity travelers (particularly those residing outside the urban core) may continue to choose to drive when travelling to another city.*

This set of assumptions regarding the future modal choices of passengers also rests on an additional set of assumptions regarding the future costs and distribution of energy within a given political economic setting or jurisdiction. For instance, estimates of future travel prices are based on forecasts of the market prices for oil and electricity in Alberta, Ontario and Québec. These prices are of paramount importance in a market context, as they will shape HSR’s success in terms of influencing the demand for *competing* modes. The usual assumption of Ecotrain and Zerotrain proponents is that

* This was the argument underpinning the City of Edmonton’s recommendation that more functional LRT and urban transit systems were needed *before* introducing HSR links to other cities (see Maimann 2014).

high future oil prices brought about from scarcity will prompt new ‘greener’ market behaviours, as more efficient modes (in particular electrified modes) become relatively cheaper to use. They point to the trend in recent years of sustained high oil prices (International Energy Agency 2012). Interestingly, the EcoTrain study of the QWC begins with a disclaimer admitting that its reported findings “in terms of HSR ridership, revenues, cost-benefit and financial viability for the Québec – Windsor corridor... could have been quite different...” if updated data on airfares (largely a result of new forecasts on the price of oil) had been taken into account after the production of the first draft (EcoTrain 2011). In contrast, the TEMS and Oliver Wyman study of the CEC assumes that the price of a barrel of oil will range between a ‘best case’ \$65 US and ‘upper case’ \$100 US throughout the project life – a forecast which in 2014 would be considered prescient.* As Natural Resources Canada (2010) explains, while most forecasters expect the price of oil to climb steadily in the coming decades because of finite supplies or higher demand, others point to the possibility of price feedbacks due to a number of possible scenarios, including reconfigurations of the energy mix and technological innovations (either through the rise of natural gas or the exploitation of shale and other unconventional reserves; see, for instance, CBC News 2013),† new regulatory commitments, or declining demand (Lynch 2014). The volatility of the market price of oil and electricity makes such calculations highly uncertain. As Smil has pointed out, there exists virtually no example of a successful attempt to accurately predict long term

* At the time of writing (fall 2014), the international price of oil had declined to its lowest levels in four years, hovering around \$66 US.

† This, of course, says nothing of the ecological impacts induced from unconventional oil exploitation.

future trends in the international market price of oil (Smil 2008). The exploitation of new unconventional hydrocarbons, combined with the introduction of more efficient automobiles and airplanes, or even expected increases in the costs of electricity (as expected in Ontario through to 2032, for example; see Morrow & McCarthy 2013) could very easily secure the dominance of fossil fuel-based modes in the intercity transport market by keeping their prices competitive with HSR fares.

Similarly, it is not clear how processes of urbanization in Canada will impact the distribution of modes or consumption of intercity transport. Will densification in Canada's largest cities coincide with lower rates of car ownership? If so (which seems to be the trend, according to McCullough 2012), then HSR becomes additionally competitive over air in particular, given the relative centrality of train stations compared to airports. As a spokesperson from VIA Rail has pointed out, "downtown cores are now becoming much more central to where people originate their trips as well as where they expect to be destined" (VIA Rail 2013). At the same time, the culture of automobility may continue alongside Canada's unique form of peri-urban growth (Artibise & Stelter 2006; Cook 2013): Such residents may just feel compelled to drive between cities (over both air and rail alternatives), particularly if the automobile sector continues to make gains in fuel efficiency (keeping costs relatively low for drivers). As Environment Canada notes, since 2005 "the increasing fuel efficiency of light-duty vehicles has offset the effects of more vehicles on the road and more kilometers driven" (Environment Canada 2013, p.15). These uncertainties problematize the forecasting of inevitable shifts from automobiles and airplanes to HSR and the attendant claim that such shifts are inevitably ecologically beneficial.

An additional problem has to do with drawing conclusions about HSR's socio-ecological potential using examples from HSR systems in other social, cultural and national contexts. Usually the French TGV and Japanese Shinkansen are highlighted as exemplars of the likely impacts of HSR development. While there is value in comparative analysis of this sort, it is dangerous to draw conclusions based on these international systems. Not only are the contexts entirely different, but the impacts in other spaces are also contested: While the French TGV is often invoked as an example of how HSR can produce a positive environmental outcome, Polino pointed out in the early 1990s that the TGV's true impacts were not entirely clear: "The real effects of the very high speed trains on industrial activity, employment and regional isolation *remain unknown*, as indeed does the evaluation of energy conservation or environmental preservation that could result from the transfer of passenger traffic away from air or automotive transport in favour of the train" (Polino 1993, p.45; emphasis added). Whitelegg (2009) has also challenged the notion that French or Japanese successes can be reproduced in other contexts, as noted above.

All of this points to uncertainty regarding the future of intercity transport in Canada, as well as likely variation in real impacts due to specific contextual factors, as suggested in the epigraph above by de Rus (2009). In turn, the likely variation in experiences by country (and even by corridor) helps to explain the complete lack of consensus on the 'real' impacts of HSR development. As Minn concluded in his political economic assessment of HSR in the United States: "In the economic, political and environmental chaos that continues to roil the world, can any projection of system ridership and revenues in 20 years be considered reliable? Indeed, the dollar figures are

so large, the life-cycle time scales so long and the externalities so amorphous, that traditional cost-benefit analysis can become an exercise in creative oversimplification” (Minn 2013, p.187). De Rus and Nombela (2007) further summarize this uncertainty as follows: “All transport modes produce negative environmental effects and accidents. The question is whether the overall balance favours HSR against road or air transport,” to which they conclude: “When [all aspects of degradation] are taken into account it is difficult to conclude whether air or rail has an environmental advantage” (de Rus & Nombela 2007, p.5). In short, HSR’s socio-ecological potential is highly uncertain, and the ability of HSR to serve as a ‘sustainable’ alternative to automobiles and airplanes is a tenuous claim. Even where socio-ecological benefits are accrued, in the context of the broader project timeframe and cost profile they would be – at best – negligible, and – at worst – negated by unintended externalities and impacts displaced to other spaces and times.

Conclusion

From the critical macro-structural analysis employed above, it seems likely that in the CEC, where the electrical generating capacity is dominated by fossil fuels, and where there is one of the heaviest car cultures in North America (Standing Committee on Alberta’s Economic Future 2014), the chances of HSR producing net socio-ecological

benefits from reductions in fossil fuel use are slim. This would also match the assessment by Siemiatycki, who in commenting on the CEC during the province's legislative review of the idea noted that HSR's environmental potential is limited at best (Ibid; see also Simons 2014). Meanwhile, while it does seem that HSR introduced in the QWC could reduce the net use of fossil fuels (and thus the associated socio-ecological ills), the net gains are relatively small given the decades-long timeframe for the project and the significant expense involved. The manifestation of HSR as an ecological fix must be understood as part of an attempt to justify the development of this technology to the potential financiers; while the primary intention is to generate economic gains, the accompanying rhetoric of HSR as a sustainable enterprise is, unfortunately, mostly unsubstantiated when considered from a critical macro-structural framework.

CHAPTER NINE: Conclusion

While environmental (both social and physical) qualities may be enhanced in some places and for some humans and nonhumans, they often lead to a deterioration of social, physical, and/or ecological conditions and qualities elsewhere. Processes of metabolic change are, therefore, never socially or ecologically neutral.

- Erik Swyngedouw (Swyngedouw 2007, p.37).

“The biggest obstacle to passenger rail renewal in Canada is ideological: many stakeholders presuppose that if passenger rail is going to have a future, it must be profitable. Let’s be clear: passenger rail travel has never been commercially profitable in Canada and is rarely so in other jurisdictions. Confusing ‘economic viability’ with ‘business profitability’ has led to a radical narrowing of our passenger rail possibilities.”

- Unifor’s *Getting on Board or Running Off the Rails?* (Unifor 2013, p.1).

“As a (more or less successively) reactionary, reactive, opportunist, mutable, experimental, diffuse, and destructively creative order, neoliberalism necessarily internalizes, absorbs, and symbiotically adjusts with its others, the spatially and temporally variegated form of actually existing neoliberalism stemming in substantial measure from these often incongruous hybridizations.”

- Jamie Peck and Adam Tickell (2007, p.48).

Introduction

This concluding chapter summarizes the main points and findings of the thesis and explains the contributions made by the work. As the preceding chapters have examined, a new narrative regarding high-speed rail’s sustainability potential began to coalesce around the technology in the 1980s, becoming increasingly popular after the turn of the Century. This Ecotrain narrative characterized HSR as solution to many of the social and ecological woes associated with high rates of automobile and air travel in Canada, and was especially emphatic in its claims about HSR’s ability to reduce fossil fuel consumption (in particular the nation’s emissions of greenhouse gases and criteria air

contaminants). As Part Two of the thesis showed, the Ecotrain vision was never fully successful in Canada, nor was it the only narrative in operation; it competed with other visions (such as the Turbotrain and Zerotrain narratives) for political legitimacy over a period of fifty years, with the Zerotrain narrative largely winning-out in policy and decision-making circles. The contest between these narratives was inevitably shaped by broader domestic and global contexts, including in particular the transformations involved in the multi-scalar processes of neoliberalization (see Brenner & Theodore 2002) and key international advances in HSR development. Within these contexts the manifestation of the Ecotrain narrative constituted an ecological fix – a neoliberal strategy of fixing space such that ecological impacts are apparently internalized or externalized while opportunities for the accumulation of capital are pursued (Bakker 2009; Castree 2008; Swyngedouw 2010).

The thesis has attempted to capture and closely examine this phenomenon via the following means: First, it has historicized and contextualized Canada's HSR development story, identifying three distinct periods and examining how the underlying domestic, global political economic and rail modernization contexts have evolved over that time (thereby creating a space for the formation of HSR as an ecological fix). Second, it has identified and categorized three core environmental political economic narratives regarding how HSR 'ought' (or ought not) to be developed according to various actors, as well as the respective discourse coalitions which espouse these narratives. Third, the thesis has critically examined the growth and cogency of social and ecological claims made about HSR in Canada, highlighting the risks and limitations inherent to HSR's

manifestation as an ecological fix. The following pages further explore these three main themes.

Three Periods of HSR Development and Evolving Contexts

The thesis identifies three main periods of HSR development in Canada and discusses how the evolving underlying contexts shaped the trajectory of HSR planning in the QWC and CEC specifically. The earliest of these periods occurred between 1964 and 1982, and was largely one of ‘emergence’ in both domestic and global HSR development. The unveiling of the Japanese Shinkansen in 1964 set off a new era of railway modernization in which a number of industrialized economies – including the United Kingdom, France, Italy, Germany, Spain, as well as the United States and Canada – sought to match or even surpass the Japanese accomplishment.* During this time, the technology was primarily proposed as a policy tool that could be used by governments to achieve political modernization (including attaining international prestige) and to address pressing social and economic problems, including making state-owned railways financially independent, increasing productivity by reducing highway and airport congestion, and in some international cases reducing dependence on foreign oil imports. The prevailing political economy of Keynesianism at the time in Canada helped legitimize the idea that HSR was an endeavour led, owned and operated by the government, with a keen focus towards benefiting the domestic economy and HSR-related industries. The unveiling of the domestically-built Turbos and their use by Canadian passenger rail Crown corporations

* As the Canadian case makes clear, not all of these efforts at railway modernization were successful.

(CN and subsequently VIA) between 1968 and 1982 marked a high-point in the nation's HSR story, since these trains technically qualified as genuine HSTs. At the same time, during the Period of Emergence HSR plans repeatedly ran up against blockages – in part a result of the legacy of the unique (and somewhat contradictory) *laissez-faire* orientation of the Canadian transport sector during the late Keynesian era, which at least in theory aimed to reduce the state's influence over the competitiveness of various modes resulting from its long standing policies of subsidization. Of fundamental importance then was the unwillingness of the federal government to spend the required sums on dedicated track infrastructure, as this one lacking puzzle piece left passenger rail beholden to the more profitable rail freight subsector for the decades to come. Canada's unique federalist structure and history of periods of inter-jurisdictional friction would also prove to be instrumental, as the late 1970s saw the coming to power of a separatist government in Québec and more autonomous 'Western-oriented' government in Alberta, the aftermath of which was a chilling effect upon projects such as HSR as they likely would have required some form of collaboration with the federal government.

A second phase of HSR development in Canada is marked by the fifteen-year period from 1983 to 1998. Despite a number of attempts by proponents to bring HSR to fruition, these years were largely characterized by 'impasse'. The rolling-out of neoliberal policies in Canada, in particular hard-line monetarism, led the federal and later provincial governments of the time to prioritize debt reduction above other social, political and economic objectives. The state's willingness to invest in the economy during this period declined significantly, and cost-benefit calculation became the predominant decision-making tool of the spending-averse governments. Canadian HSR

projects were additionally impacted by the growing realization that – with only a few key international exceptions – HSR projects were almost never profitable. The forecasted return on capital investment (for both the QWC and CEC) was in most instances deemed to be either negligible, unreliable, or too far along in the future to warrant the risks of such high costs. While the global proliferation of neoliberal governance models, bolstered by the collapse of the Soviet Union in 1989, had caused a relative slowdown of HSR capacity development at a global scale, some European nations – France, Germany and Spain in particular – had nevertheless found a way to push through the ascendance of monetarism to expand their national HSR networks. These international successes subsequently contributed to the global popularity of the mode.

A third period of HSR development in Canada, occurring from roughly the turn of the Century to 2013 – concurrent with a fourth global wave of rail modernization – is also identified and described in Part Two of the thesis. These years marked a major resurgence of interest in the idea of HSR, particularly along the lines of a nascent environmental awareness about climate change and its wide-reaching costs (Stern 2007; National Roundtable on the Environment and the Economy 2011) and limited global supplies of fossil fuels (Campbell & Laherrere 1998; Rubin 2009). Popular support for HSR grew specifically because of its presumed fossil fuel-saving potential. As Perl and Gilbert claimed in 2007, “constraints in future oil supplies will raise the value of conservation and alternative energy sources, both of which can be accomplished by electric powered [higher speed] trains” (Perl & Gilbert 2007, p.2). In addition, parliamentarians would hear expert testimonials regarding how the nation needed HSR because “[Canadians are] overly dependent on a fossil fuel based transportation system

with automobiles, trucks, and aviation, while other countries have heavily invested in electricity and renewable energies for transportation through their rail transportation networks” (Standing Committee on Transport, Infrastructure and Communities 2009). A 2009 article in *The Walrus* titled “How Canada fell from leader to laggard in high-speed rail, and why that needs to change,” also reflected this growing sentiment:

High-speed rail ensures that cities remain connected the next time the price of oil rises, and in the event that \$150-a-barrel oil returns for good. Because it is so much more fuel efficient, high-speed rail is far, far greener than flying, and in a century of dwindling oil it’s also far more economically sustainable – a fact Saudi Arabia seems to grasp, but Canada does not (Paulsen 2009a, p.38).

At one level, such statements served as important reminders of the growing unsustainability of contemporary transport relations in Canada during this period. At the same time, they played a role in reifying a narrative of HSR that positioned the technology as a sustainable alternative to existing fossil fuel-based modes.

Despite such popular appeals to HSR’s social, environmental and economic sustainability, the resurgence of the early 21st Century largely went unanswered in Canada. While numerous nations, including Canada, had turned towards roll-out variants of neoliberalism – a political economic arrangement which reopened the state’s interventionist toolbox to a certain degree – the continued predominance of fiscal responsibility proved to be the deciding factor in Canada’s HSR story. The dominant subjective interpretation of HSR under the roll-out neoliberal model, which emphasized Public-Private Partnerships and financially independent service providers, did not match the realistic requirement of major levels of public financing for such projects seen around the world. Where international HSR projects did proceed beyond the conceptualization phase during the Period of Unanswered Resurgence – in China in particular –

governments were clearly comfortable with the idea of spending tens of billions – if not hundreds of billions – of dollars to bring projects to fruition.

HSR Narratives and Discourse Coalitions

As suggested above, different actors at different times exhibited different visions of HSR development. Thus in addition to identifying three periods of HSR development in Canada, the thesis also identifies three main narratives encompassing a range of beliefs regarding how and whether HSR development ‘ought’ to occur; I label these ‘Turbotrain’, ‘ZeroTRAIN’ and ‘EcoTRAIN’. As argued throughout the thesis, these narratives have largely competed with one another for political legitimacy throughout the three periods identified above, with Turbotrain being largely dominant during the Period of Emergence, ZeroTRAIN dominant during the Period of Impasse, and both EcoTRAIN and ZeroTRAIN sharing prominence during the Period of Unanswered Resurgence.*

There are nevertheless variations and nuances amongst the proponents of these narratives. As such, the thesis also characterizes seven discourse coalitions which have supported these narratives (see Chapter Four) – the ‘Critics’, the ‘Neo-Keynesians’, the ‘Cautionists’; the ‘Eco-Modernists’, the ‘Unconvinced’, the ‘Skeptics’, and the ‘Laissez Faire Coalition’. The ‘Neo-Keynesians’ largely embody the core essence of the Turbotrain narrative by calling for a model of public HSR investment oriented towards domestic job creation and the stimulation of a national research-industrial complex; the ‘Eco-Modernists’ have encapsulated the EcoTRAIN narrative, interpreting HSR as a social,

* While EcoTRAIN had become increasingly popular at a cultural level within the polity, ZeroTRAIN held dominant within the governing parties at the federal and provincial level (particularly in Alberta) during these years.

environmental and economic *need* in an unsustainable Canada; the ‘Skeptics’ characterize the Zerotrain narrative in their focus on the calculation of HSR’s costs and benefits, of which they believe the former outweighs the latter. Two discourse coalitions – the ‘Cautionists’ and the ‘Unconvinced’ – straddle the Ecotrain narrative to a certain degree: the former also being compelled by the promise of public HSR investment (as called for by the TurboTRAIN narrative) but nonetheless concerned that there are more pressing priorities as a means of economic development; the latter also find the idea of HSR compelling but, in line with the Zerotrain ethos, worry about the high capital costs involved. Finally there are the more polemical discourse coalitions which lie at each end of the spectrum: The ‘Critics’ largely see HSR as an unnecessary technology that could potentially produce a number of unintended socio-ecological impacts, thus tending to be wary of the claims of Ecotrain-affiliated discourse coalitions as well as the apparent ‘status quo’ response of Zerotrain supporters; Meanwhile, the ‘Laissez-Faire’ coalition showcases a more reactionary response to HSR funding, only expressing support for the development of this technology if the government is not involved in the process and the markets are not distorted in any way. Categorizing the various narratives of HSR and their attendant discourse coalitions and supporters, and subsequently historicizing the battle for political legitimacy between them over the various periods of Canadian HSR development has thus helped to shed light on when, how and why high-speed rail became an ecological fix in a Canadian context.

Critically Examining HSR’s Socio-Ecological Potential

A third main aim of the thesis has been to critically examine the arguments underpinning HSR as an ecological fix. The notion of the ecological fix reveals the underlying

motivations of Ecotrain proponents, and to a certain extent Zerotrain and even some Turbotrain proponents as well,* as one of pursuing an opportunity for profitable growth. While they disagree regarding the role of the state in fostering such growth opportunities, both EM and Promethean theories share a belief in the role of technological innovation in securing both profitability and environmental sustainability. Along these lines HSR is proposed as a more sustainable alternative to the existing intercity transport modes. Yet in critically evaluating HSR as an ecological fix from a macro-structural scale (see Chapter Eight), it is evident that the socio-ecological potential of the technology is fundamentally compromised by the very premise of development in the first place. Certainly there are some merits to the notion that HSR can produce some socio-ecological benefits, but to claim that these limited and uncertain gains will produce a more sustainable system, or that such benefits merit the investment of billions of dollars into the introduction of a new mode which will inevitably induce more transport consumption, is problematic.

Contributions: Applying an EPE Framework to HSR

As the preceding chapters have shown, it is largely taken for granted in Canada that high-speed rail is inherently an ‘environmentally-friendly’ mode of transportation. The primary contribution of this dissertation is its demonstration of how HSR’s presumed sustainability potential is largely a social construction that is historically rooted in the underlying contexts which have conditioned the nation’s HSR development efforts. This

* At least those Zerotrain proponents who see a locus for private HSR development through a Promethean belief that more efficient markets yield environmental efficiencies, and those Turbotrain proponents who support the EM-based claims underpinning HSR’s environmental potential.

is the ‘lesson’ to be learned from the historical manifestation of HSR as an ‘ecological fix’ in a Canadian context. What is sorely lacking in the policy debates about Canadian HSR – both in popular and academic circles – is a more nuanced reading of the *conditionality* involved in the socio-ecological potential of this technology. Consider the following examples: *Alternatives Journal*, a publication which brands itself as “Canada’s environmental voice” featured a blog post in 2013 arguing that the lack of HSR investment will *cause* more automobile and airplane traffic in the future. The post concludes by asking the following question: “Will we continue to see continued dependence on fossil fuels from the oil sands, the detrimental environmental impact of air travel, urban sprawl and more cars, or can we push toward sustainability [by introducing high-speed rail]?” (Beare 2013). In a similar example, *Green Living Enterprises*, a company which brands itself as “Canada’s leading cause-marketing agency focused on social and environmental program development”, notes on its blog that Canada should build HSR because it will cut energy consumption, reduce CO₂ and CO emissions, overcome oil dependence, save lives and create jobs (Cameron 2014). As this thesis has shown, these types of popular expressions about HSR’s inherent sustainability potential are increasingly common – and seem to imply that all one has to do is build the lines and a compendium of problems which yield an unsustainable transport system in Canada will be solved. Yet the inherent logic supporting such claims fails to consider how an array of important decisions *matter* in shaping the socio-ecological outcomes of introducing a new mode into a complex system. For instance: Where will the lines go, and what cities will they connect? Who or what entities will provide the financing, build the infrastructure, operate the service, and maintain the system, and what are the underlying

motivations of these actors? What type of regulations will accompany development, and what type of tax regime will be implemented? Who will most likely gain from the project, and who stands to lose? What type of energy will be used to power the trains? What types of policies will be formed around fossil fuel production and consumption in the near future, and how will this shape the transport market? What is the primary objective of developing this new service? These are just some of the questions whose answers shape the way a new HSR project will unfold, and condition the impacts it will produce. In turn, the political economic context colours how such questions are likely to be interpreted and answered. As ecological political economists are wont to clarify, infrastructural developments of all stripes are inevitably marked by a lack of socio-ecological ‘neutrality’. The words of Swyngedouw in the epigraph above, as well as those of Harvey (reminding us that all ecological projects and arguments are simultaneously political economic projects and vice versa; 1993, 25) – reaffirm this tenet of EPE. Through the use of critical EPE analysis and the discussion of HSR as an ecological fix, this dissertation has thus problematized the lack of nuance characterizing discussions of HSR in a Canadian context. It has shown how HSR became an ecological fix after proponents repeatedly failed to convince decision-makers to invest in this transport infrastructure, by constructing a new narrative about the wide-ranging socio-ecological ‘benefits’ of the technology as a means of selling what was interpreted as a growth opportunity.

My purpose has *not* been to dismiss the idea of HSR entirely, but rather to contextualize and provide nuance to the popular discourses surrounding this technology. The thesis therefore makes some secondary contributions to the field of EPE and to the

policy debates surrounding HSR development in Canada: First, in examining how the regional, domestic and global political economic contexts have evolved and thereby shaped HSR development, it has elucidated some of the nuances and idiosyncrasies involved in the multi-scalar process of neoliberalization as it occurred in Canada. Second, the thesis has attempted to further define and offer an exemplar of EPE as a transdisciplinary approach to society-nature relations, using the case study of HSR to demonstrate how the underlying political economic context of development matters a great deal in shaping the impacts and outcomes of development, and further, how this context is fluid and subject to change. A third aim of the thesis has been to help inform the broader policy debates about HSR development in Canada (as above, but in this instance specifically) by shedding light on different EPE narratives and discourse coalitions and by critically examining the manifestation of HSR as an ecological fix.

Neoliberalization with Canadian Characteristics

Canada's HSR story sheds light on the uneven and often contradictory dynamics involved in the nation's political economic transformation from 'Keynesianism' to 'neoliberalism', a process that at a general level of abstraction is encapsulated by the term 'neoliberalization'. The ironic dynamic in Canada of having decades of broad popular support for passenger rail modernization without any successful attempts to bring HSR to fruition – a fact which makes the country unique amongst the highly-industrialized economies of the world – can not be adequately explained with the conventional political economic theorizations which portray both Keynesianism and neoliberalism as fixed, monolithic, universal creeds. For example, one would be justified in expecting HSR lines to have successfully emerged in Canada at some point before the mid 1980s, given a

record of Keynesian interventionist policies, concurrent attempts to develop the domestic rail industry at the time, and studies by VIA (VIA Rail Canada 1984; 1989) which forecasted an array of net economic gains from HSR development, at least in the QWC. The lack of HSR in Canada is somewhat perplexing in this sense. At the same time the resurgence of interest in the *idea* of HSR seen since the turn of the Century, and in particular the public pronouncements in favour of investing grand sums in the technology from political leaders across the political spectrum, are also puzzling given the well-known neoliberal aversion to large-scale public expenditures. Typically this is explained as the resurfacing of ‘Keynesianism’ (see Minn 2013) – a conclusion which muddies the definition of ‘neoliberalism’ by incorporating its ‘other’.

This thesis has shown that the contradictions between theoretical expectations and material experiences in Canada’s HSR development story can be elucidated by characterizing the spatial and temporal variations inherent to different political economic moments. For instance, a particular brand of *laissez faire* Keynesianism emerged within the transport sector sometime after the first NTA of 1967, which had the effect of limiting the willingness of the state to finance or even subsidize passenger rail renewal. Similarly, a particular iteration of neoliberalism which was particularly prominent in Canada from the mid-1980s through much of the 1990s made it fashionable to think of HSR as a project that states *ought not* to involve themselves with, whereas another variation – ‘roll-out’ neoliberalism – emerged after the turn of the Century in which it became acceptable to conceive of leveraging the exceptional capacities of the state in order to spark modernization, to introduce new modes and new technologies in partnership with the private sector, and to foster opportunities for increased travel speeds and interconnections

between Canada's largest cities. In short, there is not one, but multiple neoliberal approaches to HSR, just as there were different iterations seen during the Keynesian period.

While theoretical accounts of the singular neoliberalism fail to explain the Janus-faced character of HSR policies, scholars such as Peck, Tickell, Brenner and Theodore, through their discussions of the variegations involved in the material expressions of neoliberalism on the ground, and in emphasizing neoliberalization as a muddy process (Peck & Tickell 2002; Brenner & Theodore 2002), have helped to produce a theoretical framework through which we can explain the multi-headed neoliberal beast. Despite this, few attempts have been made to use a real case study to further examine the specific idiosyncrasies involved in Canada's material experience with neoliberalization. Amongst the exceptions are Keil (2002), Prudham (2004), and Gattinger and St. Pierre (2010), yet these studies all adopt regional or local-scale case studies. As such, this thesis uses the case study of HSR development to further examine the variegations of neoliberalism in practice in a broad multi-scalar Canadian context. It has interpreted the Canadian experience with neoliberalization as being largely 'terraced' and uneven, with specific expressions adopted in different jurisdictions at different times. Through such a multi-scalar approach, with a focus on 'key moments' of political economic transformation, it shows how neoliberalization in Canada was muddied by the federalist structure and the undulating dynamics of roll-out and roll-back variants within and between various governments. The implicit argument is that it is only possible to speak of a Canadian 'neoliberal turn' insofar as: a) one speaks in broad characteristic strokes that are inevitably filled with spaces of exception; and b) one sees the fractured and evolving

nature of political economic spatio-temporal frameworks such as Keynesianism and neoliberalism. This framing is important in theoretical discussions of ‘sustainable development’, because it helps to explain how different types of neoliberal governments tend to support the logics of sustainability, yet why only *some* neoliberals are willing to take steps towards financing what they see are sustainable infrastructures: Roll-out neoliberal variants combined with eco-modernist beliefs have envisioned a space wherein the state can legitimately foster a process of technological advancement in the transport sector that will yield green growth opportunities; in contrast, roll-back neoliberalism infused with Promethean beliefs about the ecological efficiencies of free markets would rather see the initiative *originating* within the private sector. In highlighting this muddy and nuanced expression of neoliberalism the thesis affirms the theorizations characterized in the epigraph above by Peck and Tickell using a Canadian case study of high-speed rail.

Ecological Political Economic Foundations Shape Outcomes

As defined in Chapter Two, EPE is a transdisciplinary approach to social science which at its core emphasizes the dialectical relationship between political economic structures and ecological outcomes (as Harvey identified in 1993). One of the contributions of the thesis has been to further define EPE and offer a unique case study of political economic change. Drawing EPE’s core ethos to HSR suggests that the question of whether HSR can truly offer social, ecological and economic benefits depends a whole lot on the context in which the train systems would be introduced. While this much has been argued in more general terms regarding the technology writ large (see, for instance, de Rus, 2009; or de Rus & Nombela 2007), the clarification appears to be largely absent from Canadian discussions about HSR development. Rather, expectations and presumptions

about HSR's impacts have largely been shaped by the well-known exemplars abroad, in particular France, Japan, and now China, while the underlying political economic contexts have been taken for granted. Yet it is problematic to superimpose the results of HSR in these other diverse examples upon a Canadian context (inasmuch as it is problematic to take a neoliberal context for granted, as discussed below). As identified in Chapters Three and Eight, outcomes will inevitably be coloured by regional and domestic factors – including low population densities, different forms of energy generation, different cultural interpretations and valuations of transportation, not to mention different political economic beliefs about the proper role of the state in such a project, and political economic foundations which themselves condition how the preceding factors have materialized historically. The impacts of HSR are highly uncertain in Canada – and yet certainty appears to accompany many of the popular discourses regarding HSR development, as showcased in the highly-detailed, positivist feasibility studies focusing on the CEC and QWC (Van Horne Institute 2004; TEMS 2008; EcoTrain 2011). Just as there is no monolithic universal 'neoliberalism', the same can be said about HSR technology and its presumed impacts.

Relatedly, through the historicist foundations of EPE, the thesis has examined how neoliberal models of HSR development have been normalized. For instance, despite the presence of experienced and competent rail manufacturers and operators domestically there is currently no regulation in place to guarantee that any high-speed line would be built or operated using Canadian materials or by Canadian firms. Rather, within a neoliberal framework it is common to see an open-bidding process in which firms throughout the world are invited to submit proposals for new contracts. Given the federal

government's existing commitments to “nondiscrimination based on country” and a “competitive procurement” process as required by membership in both NAFTA and the WTO, it is likely that any new HSR development would feature an open tendering process available to any global firm with no requirements to procure materials or equipment domestically (Taylor & Bolton 2006). The neoliberal distaste for the financial dependencies of Crown enterprises, and its aversion towards undue distortions of the transport market, have also normalized the idea that a new HSR line – *if* indeed the idea is pursued – ought to be a *private* entity *competing* with existing modes on a level playing field (which is to say without any subsidy support). The ‘level playing field’ argument has been reiterated by corporate entities that stand to lose from major HSR expenditures, such as the members of the National Airlines Council and the Canadian Bus Association, both of which have lobbied against HSR investment (Greenlaw 2007).*

The battle of ideas between varying governance models for state-market interaction suggests that ‘actually existing neoliberalism’ (Brenner & Theodore 2002) in Canada today is the manifestation of a historical contest between a variety of different beliefs regarding the proper role of the state in markets. It stands to reason, then, that for new governance models to gain legitimacy, a certain measure of mobilization will be required to contest today’s dominant political economic modes of thought. In this sense the exercise of historicization in the case study above has aimed to serve as a reminder that there are other ways to approach HSR development, or even more generally, other

* As one representative of the latter association told the parliamentary committee overseeing transport, “any future funding commitment of taxpayer monies to a high-speed rail system must be fair and should not be used to create a more uneven playing field among competing passenger modes” (see Standing Committee on Transport, Infrastructure and Communities; 40th Parliament, 2nd Session 2009).

ways to tackle the broader problems that HSR attempts to address (namely the unsustainability of the transport sector).

Informing Canada's HSR Debate

In characterizing the different EPE narratives of HSR, their relative discourse coalitions and underlying motivations, and the manifestation of HSR as an ecological fix, the thesis helps inform the concurrent debate about HSR in Canada. At one level the aim has been to categorize and contextualize the debate by characterizing the different narratives and discourses and examining the historical interplay between them. Like a political economic 'battle of ideas' (Hall 1982; Hall 1986; Hall 2011; Hall & O'Shea 2013), the various EPE narratives have competed with one another for political legitimacy throughout distinct periods in Canada's HSR development story. While the theme of history repeating itself is rampant throughout this story (particularly the Zerotrain narrative's consistent defeat of opposing visions), the preceding chapters suggest it would be incorrect to thereby conclude that Canada will never have HSR. In contrast, what this study demonstrates is that the coming to power of a governing party which holds a different political economic perspective regarding the merits of transport infrastructure investments – such as an Ecotrain narrative – could be all that is required to initiate the steps towards HSR development. In fact, this is what has been seen in Ontario in 2014 (at the time of writing) when a roll-out neoliberal government led by Premier Kathleen

Wynne promised to build an HSR line within a decade (Donachie 2014; CBC News 2014d).*

As various political leaders, transport planners, and stakeholders of all stripes debate the merits of the Ontario HSR, or any future Canadian HSR line for that matter, it would be worth considering the notes of caution stemming from the manifestation of HSR as an ecological fix. As argued in Chapter Eight, the notion that a new mode such as HSR can genuinely overcome the unsustainable character of transportation is unrealistic. Even in the QWC, which offers a more compelling socio-ecological case than the CEC, the claim that HSR is a ‘sustainable alternative’ to automobiles and airplanes is tenuous. The idea that diverting passengers from one type of vehicle to another will somehow produce more sustainable outcomes fails to deal with root causes of the underlying problem of unsustainability.

Identifying HSR as an ecological fix helps to inform Canada’s HSR debate because it reminds us that there are a range of underlying motivations for HSR development, and that often the sustainability argument is typically undergirded by a deeper motivation of creating profitable opportunities for the private sector.† As a society contemplating the introduction of new infrastructure, a number of reflexive questions need to be asked about how proposed HSR lines will take shape (as noted above). One important question which gets to the root of the problem is this: Will bullet trains primarily be designed as a means of creating growth in intercity travel and gross domestic

* Although it is too early to say, this development could mark the beginning of a new period in Canada’s HSR development story.

† This is not *always* the case, but as shown in Chapters 4 and 7 it increasingly *is* the case.

product – or will transportation initiatives be unveiled as part of a larger cultural and regulatory program *to reduce the overall volume of transport consumption*? If the former, claims about its efficiencies in travel time and energy use are likely to be limited, as gains from the new technology are likely to be negated by net growth in overall mobility. In a growth-feedback dilemma reminiscent of the famed Jevons’ paradox (Jevons 1906; see also Smil 2010), the ‘growth’ benefits appear to work *against* the efficiency gains, possibly to the point negation. As Whitelegg & Holzapfel conclude, “time savings as promised by high speed trains release time for more travel and spur on the consumption of distance to ever higher levels. The environmental consequences of this ever accelerating process are as dramatic as they are destructive” (Whitelegg & Holzapfel 1993, p.205).

At the same time, taking no constructive regulatory action – as advocated by the Zerotrain narrative, is equally problematic. This solution, to use the metaphor of a drug addiction (as Harvey 1991 does), is akin to leaving an addict solve the problem on their own through self-imposed behavioral change. This may be theoretically *possible* as a solution, yet not a very likely outcome. In taking a step back to view the leading HSR narratives in Canada from a macro-structural perspective, it is apparent that neither Ecotrain nor Zerotrain (nor a considerable portion of the TurboTRAIN proponents for that matter) successfully confront the underlying roots of the problem. Rare are the calls for a *reduction* in overall transport demand, because this is typically seen as being tantamount to a call for a reduction in growth. One of these rare examples in a Canadian context is offered by Todd Litman of the Victoria Transport Policy Institute (VTPI), who has claimed that “in a more optimal society, more optimal market, people would travel a little

bit less than they do now,” further adding that “our environmental goal is not to add a new mode that requires significant subsidy, it’s to reduce the subsidy for the existing (polluting) modes” (VTPI 2013).^{*} While this type of critique is likely to fall on deaf ears to those Zerotrain advocates in political power as well as the EcoTRAIN proponents who seek to enact a new way of thinking about investments in green infrastructure – as both of these interest groups cling to the idea that unregulated, private technological innovations can internalize socio-ecological conditions while simultaneously enabling the accumulation of capital – it is nevertheless one worth closely considering when contemplating the broader impacts of HSR development.

Conclusion

This thesis has shown how the manifestation of HSR as an ecological fix is a phenomenon tied up in a history of failed efforts to bring the technology to fruition in Canada. In turn, this history has been shaped by the underlying political economic contexts, namely a general-scale transformation known as the ‘neoliberal turn’ as well as specific spatially and temporally-variegated processes under the rubric of neoliberalization. The thesis further identified three main ecological political economic contexts for HSR in Canada – TurboTRAIN, ZeroTRAIN and EcoTRAIN – and shows how these contexts were in contestation with one another during three periods of HSR development; the early Period of Emergence (from 1964 to 1982), when TurboTRAIN was largely dominant; a middle Period of Impasse (from 1983 to 1998), when the ZeroTRAIN narrative

^{*} Though as Litman claims elsewhere (Litman 2013), the transport planning profession is undergoing a paradigm shift in which the ideas of managing transport demand and multi-modal planning are becoming increasingly accepted practices.

prevailed; and a late Period of Unanswered Resurgence (from 1999 to 2013), during which HSR gained popularity as a supposed sustainable alternative to fossil fuel dependent modes, yet during which the Zerotrain narrative nevertheless held power. In viewing the two mostly likely domestic HSR corridors from the macro-structural lenses of critical EPE, the thesis argues that even while there are some socio-ecological benefits to be gained from the development of high-speed electric passenger rail infrastructure, the grand claims about the sustainability of the technology – as proposed by the Ecotrain narrative – are largely overstated, and presuppose a business model which fails to address the structural roots underlying Canada’s unsustainable mobility relations.

Canadians interested in achieving more sustainable transport relations ought to consider some of the deeper philosophical questions regarding the structural roots of the problem and the utility of such projects in the first place. As an example, Whitelegg and Holzapfel put it thus: “The main questions are, do we need this kind of development? And is there any justification for the deliberate manufacture of travel demand for the purposes of ensuring a profitable return on an investment?” (1993, p.204). The danger in *not* asking such questions is that we risk overlooking the real *roots* of Canada’s transport overconsumption problem – the nation’s political economic structure – for which the introduction of HSR would change little. While the neoliberal approach to sustainable transportation has centered on introducing new commercial enterprises, expanding markets and fostering technological innovation, an EPE analysis reminds us that genuine socio-ecological change is unlikely to occur without a restructuring of the broader relations of mobility which define how and why we transport ourselves and our goods from one place to another.

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APPENDIX A
List of Requested Interviews

Organization/Institution	Outcome
Alberta Federation of Labour	Interview conducted April 10 th , 2013
Alberta High-Speed Rail Inc.	Interview conducted April 8 th , 2013
Alberta Minister of Transportation	Interview conducted April 9 th , 2013
Bombardier Transportation	Interview conducted May 17 th , 2013
Bus Industry Transport Economist	Interview conducted November 8 th , 2013
Federal New Democratic Party	Interview conducted November 4 th , 2013
Frontier Centre for Public Policy	Interview conducted April 8 th , 2013
Mayor of Québec City	Request declined
Ontario Minister of Transportation	No response
SNC Lavalin	Request declined
Transport Action Canada	Interview conducted November 12 th , 2013
Transport Canada	Responses provided by email, August 28 th , 2013
VIA Rail Canada	Interview conducted June 26 th , 2013
Victoria Transport Policy Institute	Interview conducted June 4 th , 2013

APPENDIX B

Sample Interview Questions

Theme: Demand for HSR

Is there sufficient demand for high-speed rail (HSR) in the Québec City-Windsor Corridor or Calgary-Edmonton Corridor to warrant its introduction?

Theme: Costs and Benefits of HSR

To what extent are there social or ecological ‘benefits’ to be accrued from the introduction of HSR within high use transport corridors?

Are there any social or ecological ‘costs’ (costs beyond capital and operational expenses) to be considered from the introduction of HSR as an additional mode?

Approximately what is a reasonable expense window for the introduction of high-speed rail to the Québec City-Windsor Corridor (approximately how many billions of dollars)? What about the Calgary-Edmonton Corridor?

Theme: Economic Stimulus

To what extent does current spending in passenger transport infrastructure ‘drain public coffers’ and to what extent does it produce positive economic spinoffs?

To what extent does infrastructural spending (of the magnitude expected to make HSR a reality) create jobs?

Theme: Intercity Passenger Transportation

Would *new* high-speed rail lines be better off if they were incorporated *within* VIA Rail’s mandate as Canada’s national rail crown corporation, or *not* included within VIA’s operations?

To what extent should the federal and provincial governments regulate the intercity passenger transport market?

To what extent should public transport authorities coordinate (through regulations and public ownership) the schedules and service offerings of different intercity modes (buses, air travel, highways, rail), and to what extent should authorities leave such diverse modes to compete in an open marketplace?

Theme: Financing Schema

Should Canadian high-speed rail projects be financed by public funds, private funds, or some combination thereof (e.g. ‘Public-Private Partnership’)?