



Writing the Next Chapter of Canadian Environmental History

Environmental History During the Anthropocene

Critical reflections on the pursuit of policy-oriented history in the man-age¹

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March 27, 2011

The *Anthropocene* defines Earth's most recent geologic time period as being human-influenced, or anthropogenic, based on overwhelming global evidence that atmospheric, geologic, hydrologic, biospheric and other earth system processes are now altered by humans. The word combines the root "anthropo", meaning "human" with the root "-cene", the standard suffix for "epoch" in geologic time. The Anthropocene is distinguished as a new period either after or within the "Holocene", the current epoch, which began approximately 10,000 years ago (about 8000 BC) with the end of the last glacial period.²

Recently, Ursula Franklin observed that, "[t]he concept of 'environment' has become increasingly techno-centred and ego-centred, focused on the man-made milieu, and has deflected human awareness away from nature"³. As nature has slipped from awareness it has become a "passive background to the man-made environment." Franklin explains that she used the term "'man-made' advisedly to reflect the gender of those who, for the most part, engineered the new industrial environment" that relegates natures (human and otherwise) to passive backdrops. This is a problem, Franklin warns, since for "most of human history, nature has been regarded as independent, often dangerous, and usually

unchallengeable.”⁴ It is only within the last century that nature has been transformed from autonomous power to passive backdrop.

Nature is dead and gone in the Anthropocene. All that is left are constructed environments. The age of man, named by earth system scientists who measure time in spans of thousands of years, holds ambiguous meaning when it enters history, human scaled time, where nature is regarded as a subject rather than observed as a passive object. In the Anthropocene all environments are man-made, or at least altered or deconstructed by the industrial way of life. This way of life, referred to as “not up for negotiation” by the elder G.W. Bush at the UNCED⁵ Rio Earth Summit in 1992, and “something new under the sun” by environmental historian J. R. McNeill in 2000, roughly emerged over the 100 year period stretching from 1890 to 1990⁶. By the time sustainable development was on the global scene a threshold had already been passed. No longer embedded in a time that had encompassed practically all of human history, we left an age where the god-given outweighed the man-made.

The metaphysical shift that saw nature replaced by the man-made was imagined in Europe but spread around the world as natural history and philosophy transformed into the natural and social sciences. The use of quantitative methodology was a major accomplishment and detour from the traditional work of natural historians and philosophers who up to the end of the nineteenth century displayed a pronounced aversion toward measurements and numbers⁷. Researchers with an eye to assisting the state, such as the Prussian biologist Freidrich Heincke, suggested that this aversion to measurement and numbers had to change if knowledge of nature’s laws and the advancement of practical resource conservation were to occur. In an article published in 1898 he scolded morphologists for avoiding quantitative analysis and was adamant that “this aversion toward measurement and numbers, which at times is heightened into contempt, is incomprehensible, inadmissible, and unpardonable when the scholar demands that his labours be regarded as a contribution to the knowledge of the true laws of nature.”⁸ The instrumental science called for by F. Heincke has indeed become a powerful tool for policymakers. By identifying quantitative

mathematical relations understood to be natural laws, nature came to be imagined as a productive economic machine with policymakers in control.

Dispensing with mathematical abstractions to make her point (though certainly not due to lack of ability), Ursula Franklin suggests that the Canadian government might learn how to treat nature more appropriately if it “could look at nature the way it looks at the United States: as a tremendous, sometimes dangerous power with which one must live.” She calls on readers to imagine the Canadian government acting toward nature with the same spirit of caution and prudence accorded to the world’s superpower. Unfortunately, she concludes, “considerations of the power of nature have not entered Canadian political thought.”⁹ While considerations of the power of nature have failed to enter mainstream political thought and policy practice in Canada, the agency of nature has played a central role in the interdisciplinary academic fields of environmental history, philosophy, justice, political ecology, science and technology studies, and the history of science. In environmental history nature is often depicted as an actor rather than a backdrop, stage or infrastructure. Increasingly nature’s agency appears and matters, it becomes a historical subject driving the plot.

One of the roles identified for historians in the policy process has been to provide useful political correctives for decision makers by pointing out the “historical assumptions and analogies used by policy makers.”¹⁰ with reference to nature and culture-nature relations over time. I agree with J.R. McNeill when he argues in *Something New Under the Sun* that the 1890-1990 historical period produced something new in terms of the scale of environmental change unleashed by the application of techno-science and the resulting industrial lifestyles fueled by fossilized energy that accelerated after the Second World War. The period from 1890-1990 saw the creation and propagation of the industrial way of life around the world and the slow emergence of an anthropogenic planet. In what follows I explore relationships between environmental history and policy from two different perspectives. First, I explore how history has justified its usefulness to policymaking and policymakers within the status quo industrial order that has produced the

Anthropocene. This section provides examples from around the world where history has been made useful for policymakers and policymaking, referring to environmental examples to illustrate the various approaches that have been proposed and implemented.

I draw heavily on a recent review article by historian of science and technology Richard Hirsh who situates historians primarily as the servants of decision makers, contributing to public policy largely understood as a top-down expert-oriented practice akin to social engineering. From this perspective, environmental historians become policy relevant when they offer solutions to environmental problems as defined by government agencies or corporations. Nature shows up within this managerial frame as a set of resources and human interaction with nature is reduced to simplified ahistorical caricatures (eg. Garrett Hardin's Tragedy of the Commons model) that can be measured, predicted and controlled. This constrains possible narratives emanating from environmental history to instrumental descriptions that frame environmental issues as amenable to managerial technocratic resolution.

Drawing on the work of Julian Zelizer, Hirsh identifies five categories of historical research that describe various ways that academic historians have put their professional authority and expert knowledge to work in the policy process¹¹. He illustrates how historians of technology have assisted policymakers facing decisions about energy by providing historical context and information about alternatives taken in the very recent past (decades) or in other jurisdictions within the USA or the European Union. Many of the examples from Hirsh's energy policy work in the United States reduced the historian to describing energy options within the status quo industrial order. Coal fired power plants versus nuclear reactors. Supply side versus demand side energy management through market mechanisms or state taxation. I argue that this standard approach to applying history to policy is far too little, too late for environmental historians in the Anthropocene.

Second, I examine how the work of historians can address the more fundamental questions raised by Ursula Franklin. How can environmental

historians contribute to reimagining eco-social relationships and the industrial mindset that produced the Anthropocene? What temporal scales are appropriate for this task? Whose history should we tell using what methods? This section of the essay draws on the work of Ivan Illich to derive some initial answers to these questions. I conclude the essay with a call for environmental history that engages more with environmental justice, political activism, and the vernacular than institutionalized policymaking, environmental science and ecological statecraft.¹²

Applying Environmental History

History Tomorrow provides commercial access to top quality historical, geoarchaeological, ecological, palaeo-environmental, and associated heritage services research. Clients include private and public businesses, local and national government agencies, schools, tourist bodies and heritage design consultants.¹³

A quick Google search under the words “Environmental History” and “Policy” reveals over a million hits. Among the first results is the *Research Centre for Environmental History and Policy* at the University of Sterling in Scotland. Established in 1999, the *Centre* is an interdisciplinary home to environmental scholars from the School of History and Politics, the School of Biology and Environmental Sciences, and the School of Law. The *Centre* has created two for-profit ventures that mobilize environmental history expertise for businesses, government agencies, schools, heritage and tourism clients. The *Centre* promises that “by learning from the past we [environmental historians] can inform future policy decisions” by providing a useful “long-term perspective on change.”¹⁴

Under the *Centre's* model, authoritative and valuable environmental history derives from an ability to guide policymakers through fraught decision making processes where “what is seen through contemporary eyes as abrupt and unpredictable becomes cyclic and comprehensible when viewed at appropriate time scales.”¹⁵ The key word here is ‘appropriate’. What is the appropriate time scale to analyze environmental change when one wishes to be policy-relevant? How is it determined? This is a crucial question to ask since it has political and

normative consequences. The time scale in many ways will determine the message that is communicated to policymakers. This in turn will influence the design of policy interventions to alter behaviour toward the environment. For as the Research Centre notes, “public opinion and the willingness to change patterns of behaviour are just as important for future environmental good practice as understanding the scientific mechanisms of environmental change.”¹⁶

The emphasis on delivering useful historical information to feed into effective advertising campaigns to achieve environmentally-inspired behavioural change assumes that historians have the ability to produce historical analogies and evidence as needed to steer public opinion. This integrates the historian into a social engineering project aimed at individual behaviour modification.

The above instrumental approach to applying history to policy reflects changes brought on by neoliberal restructuring of the university sector worldwide, with an emphasis on measureable and thereby manageable outputs (impact factors, research funds raised) and shifts toward merit-based compensation tied to productivity rather than secure long-term tenured employment. The trend toward public-private research partnerships and framing research as a market-oriented activity producing alienable intellectual property has advanced in Canada with recent restructuring of the tri-council funding agencies to favour applied market-oriented research. The imposition of intellectual property policies that commodify and enclose publically funded research encourages academics to think about what they have to sell in the newly emerging knowledge economy. There is no role in this new regime for intrinsically-valued curiosity-based research. Indeed research and development are twinned in this new approach with the university being understood as a producer of intellectual property and an innovator of patentable market-based solutions.

The instrumentalist ethos focused on mobilizing academic knowledge for the state and market came to full fruition after World War II. Contemporary environmental policy emerged and was institutionalized in Europe and North America from the end of the nineteenth century as a technocratic, problem-solving activity charged with applying positivist science to deliver practical assistance for state administrators. Scholars argue that the roots of

environmental policy, resource and environmental management should be understood within the context of Newtonian mathematics, the Baconian scientific method, Cartesian philosophy and the centralizing state-making activities of modernity. Environmental historian Carolyn Merchant notes that our current pattern of human-nature relations evolved out of a particular Western history—a history originating with British biblical reinterpretations in the early eighteenth century. Out of the disorder of post-revolutionary England, biblical passages were reinterpreted to help legitimize the creation of a new social order necessary for entrepreneurial advance and the expansion of market society.

Reinterpretations of biblical texts in the early nineteenth century constructed God as “a caretaker, steward, and wise manager of his entire created world.” Through these biblical reinterpretations, “God-as-universe-manager” came to serve as the model for “humans-as-managers-of-the-earth.”¹⁷ These historic roots offer critical insights for explorations of contemporary environmental policy. The reinterpretation of nature as a collection of dead mechanical objects, in place of a living earth, allowed for increased exploitation of a secularized nature understood as a collection of inert resources.¹⁸ The need for new social orders following the breakdown of feudalism encouraged the emergence of top-down politics aimed at strengthening centralizing states.¹⁹ Flowing from discoveries and arguments made in science, philosophy and politics that helped to create the conditions for the emergence and expansion of capitalist market society, a small group of human beings were charged with the management of the earth.²⁰ These historic developments empowered and liberated some members of society (primarily European male land owners and entrepreneurs, scientists and political leaders) and widely dispersed some species (mainly domesticated plants and animals and their associated biota) while denigrating and enslaving others (women, colonized peoples and many endemic wild species and habitats).²¹

While sharing roots with this European history and the development of scientific forestry in Prussia and Saxony (1765-1800), the beginning of North American environmental policy is usually associated with the rise of the American Progressive movement at the end of the nineteenth century.²² Under the utilitarian banner of “the greatest good of the greatest number in the long

run,” American conservationist and first chief of the U.S. Forest Service, Gifford Pinchot, wrote that conservation was about development, not preservation, and that “the first duty of the human race on the material side is to *control* the use of the earth.”²³ Based on a recognition of “modern industry’s power to deplete natural resources,” state-based environmental policy promoted command and control systems to conserve nature (understood as bundles of natural resources) from “early, complete, or unrenowable exploitation.”²⁴ The concern was not to halt industrial expansion, but to ensure the conditions for its continuation. The responsibility for environmental policy was placed in the hands of expert administrators in the nation state who were charged with managing resources as state-property.²⁵ Traditional environmental policy continued to develop throughout the twentieth century with a focus on control over people and natural resources through Newtonian science, State-centered bureaucracies associated with top-down administration, and anthropocentric environmental ethics focused on instrumental industrial interests.

This traditional understanding of environmental policy is the subject of growing criticism and rearticulation. From a historic state-based focus on predictability, stability, command and control, contemporary environmental policy and governance theory increasingly advocates a diverse collection of participatory and adaptive learning strategies to cope with uncertain, complex, nested, self-organizing eco-social systems.²⁶ This shift in emphasis from policy interventions understood primarily as control-oriented to policy understood primarily as coping has led to the erosion of traditional boundaries between policymakers and citizens. This change suggests that environmental policymakers are active participants embedded in dynamic self-organizing eco-social systems, as opposed to objective observers of a Newtonian clockwork universe who have access to a transcendent God’s eye view.²⁷ The increasing use of the term ‘self-organization’ to describe ecological and social systems has wide-ranging scientific, political, and ethical implications as the formerly managed come to be seen as potentially self-managing. As Wilson and Bryant proclaim, “all [humans] can be considered as environmental managers insofar as their livelihoods are primarily dependent on the application of skill in the active and

self-conscious [direct or indirect] manipulation of the environment.”²⁸

Approaches to environmental policy are increasingly founded on ahistoric economic analogies: “We assume that every society has its own means and adaptations to deal with its natural environment...In some cases, the capital of local knowledge may be used and organized in such a way that it...amounts to a management system.”²⁹ We are led to believe that “management systems,” “capital,” and “adaptation” are universals that appear everywhere throughout history.

While these theoretical shifts in perspective have not been widely translated into on-the-ground environmental policy in Canada, the ideal and image of environmental policy as a practice and identity focused on control is under increasing attack.³⁰ Within this new context there is increasing interest in understanding the role of colonialism in environmental change. This has developed an impressive literature on the environmental implications of the British and other Empires³¹. Australia has played a central role in this post-colonial environmental history. The edited collection by Steven Dovers entitled, *Environmental History and Policy: Still Settling Australia*, however, has been criticized for failing to offer “any global or theoretical context” and therefore missing an opportunity to critically analyze Australian occupation and settlement (as well as rural de-settlement) as processes.”³² The criticism that environmental history has many local narratives but no unifying theory or common political or normative position is a frequent complaint in the field. This betrays a belief that history can achieve unity on the model of the physical sciences and join in the search for natural laws. Without a unifying theory, it is difficult to predictably integrate historical knowledge into policymaking. This is a problem for policymakers, however, and not necessarily environment historians.

Even if environmental history were a science there would be problems applying history to policymaking. A noted paradox with the use of scientific knowledge in policymaking is that while science is built upon the value and goal of transparency, the various techniques that are used to obtain transparency often undermine themselves. Precision and expertise often compete with the

value of transparency, for example, because when scientific replication is achieved through precise quantification, only a narrow group of experts can meaningfully understand the significance and check the results. Furthermore, a paradox of quantification and reification can occur when scientific measurement leads to the fallacy of misplaced concreteness. When simplified maps are taken as the territory, an illusionary God's eye view can promote the idea to policymakers that predictions are certain and manageability is assured. Finally, the paradox of scale frustrates the goal of scientific transparency when efforts to involve large numbers of people undermine the possibility of rational communication in ideal speech communities in favour of coercion through authority, status, or financial means.³³ These paradoxes associated with applying science to environmental policy should give environmental historians pause when contemplating how history can be applied to policy.

As Gregory T. Papanikos, Director of the *Athens Institute for Education and Research* and the General Secretary of the *Economic and Social Council of Greece* observed in his opening address at the *Fourth International Conference on History: From Ancient to Modern* in Athens, Greece in 2006, "policy-makers have a lot to benefit from reading history when they make everyday decisions." He cautioned the audience not to interpret his comments as "a suggestion for history instrumentalization (e.g. the writing of a practical history)." He deferred to professional historians to set their own research agendas but called on them to spread the fruits of their research widely to policymakers and other non-historians. Papanikos argued that policy-makers can benefit from using history to: "Identify the (historical) root of an issue (problem); Generate and process historical data in order to understand and interpret contemporary issues [including] ... the empirical evaluation of past policy implementations.; [And to] expand the set of ideas or use old ones in order to formulate new policies."³⁴

Sympathetic to the pragmatic approach advocated by Papanikos, Richard Hirsh frustratingly points out that "despite widespread acceptance of the notion that history provides tangible benefits, historians usually remain reluctant to apply lessons to real world situations."³⁵ He attributes this reluctance to an eagerness on the part of historians to be viewed as unbiased recorders of events

rather than advocates or proponents for one perspective or another. There are also theoretical concerns that historians raise surrounding the relevance and possibility of translating historical analogies faithfully into useful advice for decision makers facing unique contemporary contexts.

Hirsh argues that because “the history of technology emphasizes the importance of the social construction of technology, its practitioners may have special qualifications to help people who shape technically oriented policy.”³⁶ Social construction has also been influential in environmental history. Does it follow that environmental historians are better situated to be of service to environmental policymakers because many of us deploy constructivist methods? Does it makes sense to argue that those who have illustrated the socially constructed character of wilderness, Bill Cronin for example, are better suited to advise environmental policymakers than those who argue from determinist or essentialist positions? I differ with Hirsh on the implied audience he suggests for historical knowledge and for the way history is used in his examples. Are environmental historians conducting research and writing exclusively for policymakers in positions of economic and political power? Or are we interested in orienting our research to the world’s majorities, the governed and the policed, the targets of the policymaker?

When history is used to help those who shape policy it is not deployed publically. History becomes reduced to a set of “overlooked factors that policymakers ought to recognize” and historians take on a therapeutic role helping to “sensitize policymakers so they can circumvent mistakes and surprises...highlighting concerns that may otherwise be overlooked.”³⁷ In order to maximize their usefulness for policymakers, however, historians are instructed to avoid carefully qualifying their use of analogies which, Hirsh cautions, makes “their work become less useful to decision makers.”³⁸ At the end of Hirsh’s article we are finally told that “policymakers already employ history, though often to make poor analogies, that support positions they have adopted for a host of reasons.”³⁹ This political observation would seem to counsel care when environmental historians deploy historical analogies for policymakers. However, we are told that history itself can “serve as a corrective to help focus

scrutiny on badly made assumptions or improperly used examples of past events employed to buttress policymakers' agendas."⁴⁰ This casts the historian in the role of politically astute policy critic as opposed to policy wonk. But when Hirsh summarizes the role he thinks historians of science and technology ought to play in policy, it is all about making policy more effective rather than critiquing its underlying assumptions.

Hirsh sells historians of technology to policymakers when he argues that by comprehending the "social elements that play into the acceptance or rejection of technologies, historians of technology can help policymakers avoid committing resources to problems that seem purely hardware-oriented; we can point out that they also need to overcome non-technical barriers by using methods that specifically address social impediments to acceptance of novel technologies."⁴¹ By the end of the essay, Hirsh advocates historians stand firmly with policymakers assisting them in their task of overcoming impediments to the acceptance of new technologies, rather than questioning the assumption that new technologies are necessary or will result in a better world. This is history in the service of managerial effectiveness rather than the public good. This is history that takes for granted the right to manage nature and people as sets of scarce natural and human resources. One is left wondering why Hirsh counsels junior faculty at the end of his essay to obtain secure, tenured positions before venturing into the world of policy. If one wants to be a critic, advocate or activist there might be some risk, not if one is assisting policy implementation. This parting advice points to the political character of policy-relevance in the contemporary academy.

While changes in research funding priorities and university restructuring encourage environmental historians to put their knowledge to work in the policy process, it is important to keep in mind that environmental policy is dominated by idealized abstractions that understand nature and people as collections of scarce resources. Nature reduced to resources or backdrop provides the content and context of environmental policy. This approach to combining environmental history and policy mobilizes the humanities as assistants to policymakers. This can end up occluding, rather than clarifying, the challenges facing human-nature

relations in the Anthropocene. Environmental history has the potential to fundamentally re-imagine and call into question human-nature relations becoming so much more than a scribe for the powerful.

Environmental History After Nature

"Life" cannot be understood apart from the "death of nature." In a continuous thread which runs back to Anaxagoras (500-428BC) and up through the 16th century, an organic, whole conception of nature was a constant theme in the West. God was the pattern that connected the cosmos. With the Scientific Revolution, however, a mechanistic model came to dominate thinking. As the object of man's will, nature was transformed into dead material. This death of nature, I would argue, was the most far-reaching effect of the radical change in man's vision of the universe.⁴²

In 1980, medieval historian and social critic Ivan Illich wrote an overdue letter to friend and counterculture icon Steward Brand, creator of the *Whole Earth Catalogue* and editor of the journal *Co-Evolutionary Quarterly*.⁴³ Illich explained to Brand that his plan to write an "epilogue to the industrial age" had become focused on studying history, popular cultures, mentalities, vernacular practices and tools that all too often have been "overshadowed by the history of ideas, institutions and dominant styles" associated with industrial values.⁴⁴ In essays written throughout the 1980s and 1990s he explored the influence of industrialization on politics and the erosion of what he called vernacular values. No longer "who get's what?" or the "apt means of production," Illich believed that today the most urgent political questions involve how to navigate trade offs between industrial growth and freedom. And while the biophysical costs of industrial growth are increasingly documented the negative impacts of growth on human freedom are rarely mentioned.



Figure A Three Dimensions of Social Choice (Left-Right; Hard-Soft, Vernacular-Industrial)⁴⁵

Industrial values are oriented toward the accumulation of commodities to meet needs "defined in terms of packaged goods and services designed and prescribed by professionals, and produced under their control." The industrial mindset imagines a world

composed of individuals driven by considerations of marginal utility while the vernacular is composed of numerous “individuals who are differently competent at coping with reality, the opposite of *homo economicus*.”⁴⁶

Illich uses histories of diverse vernacular practices to fundamentally call into question the industrial way of life that he identifies with the monopoly of the commodity-form. The vernacular is unlike and incommensurate with the commodity-form since it refers to activities that go beyond economic provisioning. Vernacular ways of farming, fishing, cooking, speaking, eating, dwelling, praying, healing, and studying are as varied and diverse as the people who engage in them.⁴⁷ Illich’s insistence on the political and moral superiority of the vernacular over the commodity-form provides a useful standpoint to orient research and writing in applied environmental history during the Anthropocene. Next, I explore how Illich approached the history of energy and contrast this with the standard treatment energy receives in policy-oriented historical research.

In 2010, a journal entitled *New Geographies* posthumously published an essay Illich originally wrote in 1983. Titled, *The Social Construction of Energy* the paper narrates how “energy” changed its meaning from referring to human vigor to denoting nature’s scarce capital. The central thesis the essay develops is that once nature has been interpreted as a domain governed by the assumption of scarcity human beings are “redefined as nature’s ever needy clients” born under the abstract axioms of economics rather than into a sensible natural world.⁴⁸

In the fascinating history of the social construction of energy, natural and social scientists cooperate to fabricate a new entity that has since come to appear natural. The word “energy,” Illich explains, “functions as a collage of meanings whose persuasiveness is based on the myth that what it expresses is natural.”⁴⁹ There are several obstacles that prevent most people from seeing that energy is a construct rather than a fact of nature. The energy referred to in Einstein’s famous formula $e=mc^2$ did not exist until the early 1800’s and energy as a socially meaningful concept is incommensurable with the scientific construct that appears in the formula. Just as he did for the history of water in *H₂O and the Waters of Forgetfulness*, Illich draws our attention to the fundamental differences

between the idealized mathematical abstractions of science (H₂O) and everyday experienced phenomena (water) and the dangers that accompany failing to differentiate between them.⁵⁰ The distinction between scientific constructs and socially meaningful concepts relating to nature has been explored by Canadian environmental historians such as Jamie Linton in *What is Water?*, Julie Cruikshank in *Do Glaciers Listen?*, Joy Parr in *Sensing Changes*, and Stephen Bocking in *Nature's Expert's*, among others.⁵¹ In my own work, *Managed Annihilation*, I describe the differences between scientific constructions of fisheries that permit manageability and the knowledge and judgment that fishermen possess.⁵² Each of these authors explores the practical, moral, and political implications for human-nature relations based on different historically situated ways of knowing nature (scientific, affective, sensuous, and so on).

Environmental historians can help environmentalists and policymakers understand that the “energy” they discuss when lobbying for and crafting policy is categorically different from the “E” that scientists manipulate in equations and climate models. Blindness to these differences means that energy policy discussions in sectors like transportation revolve around the allocation of scarce energy resources. Calculating the optimal balance among moving people around by feet, bicycles, cars, subways, buses, planes, trains, and other undifferentiated means becomes the frame within which policy takes place. This is a problem because lumping categorically different means into one amalgam makes it impossible for political and ethical judgment to occur. Illich explains that in order to understand the differences between various means of transportation it is crucial to realize that the actual space through which people drive cars, for example, is of a radically different kind than that traversed by people on foot or riding a bicycle. Quantitatively measured using Cartesian coordinates, modern space is an idealized mathematical abstraction much different than the actual places to which spatial co-ordinates refer. This space is not commensurable with the territory one experiences when walking or biking which constitutes a commons—a place that one person can use without making it any more difficult for others to use it as well. Illich is worth quoting at length on the distinction between people and motors for it illuminates environmental justice issues rarely associated with official transportation and energy policies.

People and motors do not move through the same kind of space. Automobile people culturally constitute the commons on which they walk, and stay within the range of their feet at the self-limiting rhythm of their bodies. Vehicles tend to annihilate commons into unlimited thoroughfares. By transforming commons into resources for the production of passenger miles, vehicles take the use value out of feet. They homogenize the landscape, make it nontransitable and then catapult people from point to point.⁵³

The idea that space itself has a history that differs by culture and context is lost in environmental policymaking dominated by the discourses and quantitative methods of science and engineering. In *The Shadow the Future Throws*, Illich argues that the unsustainable attempt to transform the human condition through industrialization has rendered people “hostages to a lifestyle that provokes doom.”⁵⁴ Rather than eliminating human disability and suffering, industrial values have breached limits set on human agency by nature and history producing new forms of misery and a growing sense of apocalypse. And while ecology and the environmental movement present themselves as being oriented toward protecting life from this industrial destructiveness, Illich feared these good intentions would lead to a hellish degradation of nature and human life. Rather than embracing and endorsing the ecological worldview, Illich warned that ecology was part of a “systematic movement to manage both nature and people’s lives” in accordance with the idealized mathematical abstractions of a new administrative class of scientific experts.

Illich cautioned against discussing vernacular values in terms of industrial ones. When one imputes “energy amounts to the man on his feet” one inevitably plays “into the hands of the ecologist” by blurring a fundamental distinction between autonomous and heteronomous action. Walking through a commons is incommensurable with being propelled through space strapped to a motor. One can be made available to all the other relies on competing for scarce passenger miles. This cautions against the projection of scientific understanding on the past and loosely drawing analogies for policymakers across historical contexts. When we describe the past using the categories of the techno-scientific present we conjure illusions that nature in the past was equivalent to the contemporary environment under the regime of scarcity.

Environmental policy under the regime of scarcity has become about bringing people (understood as human systems) and nature (biophysical systems) into line with rational policy designs. This does nothing to grant political agency to people or power to nature because the world under examination contains no socially meaningful concepts, only abstract scientific constructs understood by an elite few. The central argument in *Energy and Equity* is that the first step toward addressing environmental policy issues in industrial society is to recognize that there are always thresholds “beyond which technical processes begin to dictate social relations.”⁵⁵ In the case of energy use, Illich documented that the threshold of social disintegration caused by high energy lifestyles is independent from the threshold at which the “conservation of energy produces physical destruction.”⁵⁶

Long before anthropogenic climate change emerged as a matter of concern the industrial way of life was degrading social relations and cultural mindsets. Illich uniquely argues that cultural and social thresholds are more sensitive than bio-physical ones, occurring much earlier in history and at lower levels of energy exploitation. More generally, his argument implies that the atrophy of the social imaginary by the industrial mind-set occurs far earlier than the damages to the physical environment due to runaway industrialization. He cautioned that any “avoidance of an even more horrible degradation depends on the effective recognition of a threshold in energy consumption beyond which technical processes begin to dictate social relations.”⁵⁷ This approach to energy policy, which encourages deliberation on limits, equity, sufficiency, and what “enough” means in particular contexts, runs counter to scientifically based environmental policy that is oriented toward sustaining energy capacity and conserving resource use.⁵⁸

What Should Environmental Historians Do?

I have outlined two radically different approaches to applying history to policy in an effort to understand the significance of putting environmental history to use. One approach situates the historian as a servant to policymakers. In the other historians raise political and moral concerns through histories of the

anthropogenic present. I want to close my reflections on environmental policy and history with reference to one final essay by Illich.

In *Research by People*, he distinguishes between two different modes of conducting research that are useful to think about as NiCHE writes its next chapter. Most research in industrial societies is conducted in large institutions where research is paired with the development of commodities. R&D is politically problematic because research in this mode is always being done to and for people, never by people themselves. Illich proposes a model of research conducted by people where it “is done with few or no funds, no sponsorship, no access to publication in the prestigious journals, producing results that are without interest to the supermarket.”⁵⁹ This second model conducts research to increase the use value of daily activities without increasing dependency in stark contrast to research focused on the efficient allocation of scarce resources.⁶⁰ As stated earlier, Illich was extremely skeptical of the new ecological sciences. He argued that the new ecologically-oriented R&D “no longer pursues the production of goods or services for more people. Rather, the research seeks to determine what people have to be compelled to do for themselves, all the while believing that they do it for their own good.”⁶¹ This warning has become a reality as the human dimensions of environmental change become the latest target of policymakers. From a science oriented toward controlling “external nature, the new R&D has shifted toward the search for means which permit the subtle but effective imposition of self-control on people.”⁶² Learning how to manipulate attitudes and behaviours without changing the industrial way of life is what this new environmental policy aims to achieve.

The aim of this paper has been to explore how environmental history and policy are related and to suggest alternatives. I have explored the status of nature in the Anthropocene and reflected on how this status influences environmental policy and politics. If, historians of science and scholars of science and technology studies are correct in their claim that “technoscience today produces new worlds of existence—new ontologies” then politics in the Anthropocene is about recognizing and fostering the existence of alternative ontologies.⁶³ Illich provides distinctions that allow environmental historians to recognize the existence of thresholds beyond which nature loses agency and

becomes a passive backdrop. In Illich's histories of the present, environmental historians are provided guideposts to begin to understand alternative uses of history in environmental policy. By favouring the vernacular over the commodity form, autonomy over heteronomy, auto-mobility based on feet rather than motorized transport through space, Illich can perhaps begin to help fill the stated theoretical void in environmental history. Rather than seeking a unifying scientific theory that will make us more managerially effective, vernacular environmental history, however, points to a more politically active and morally astute position.

To conclude I would like to say a short word about teaching in the brave new world of applied history. In Hirsh's article he laments the fact that academic historians continue to be trapped in a culture that shuns practically oriented work. He claims that "those of us interested in policy may need to work indirectly by influencing students and by taking on work outside our academic positions" including consulting and running for elected office.⁶⁴ In *Teaching as Activism: Equity Meets Environmentalism*, Ursula Franklin offers different advice. She counsels that the "specific issues of our teaching and activism must be seen as illustrations of more basic problems, problems that can be resolved only through a fundamentally different ordering of social and political powers and priorities."⁶⁵ These two approaches to teaching, one targeting students as potential future policymakers, the other pointing out the need for a radical reordering of power and priorities, reflect the spectrum of choices we face as environmental historians struggling to sensibly apply our craft during the Anthropocene.

Endnotes

¹ This essay is meant to be provocative and stimulate discussion and debate surrounding the involvement of environmental history in policymaking. It has been prepared for the *EH+ Writing the Next Chapter of Canadian Environmental History* workshop taking place in Hamilton, Ontario from April 29-May 1st, 2011.

² Erle Ellis (Lead Author); Jay Gulledge (Topic Editor) "Anthropocene". In: *Encyclopedia of Earth*. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the *Encyclopedia of Earth*

September 10, 2008; Last revised Date September 22, 2010; Retrieved March 22, 2011 at www.eoearth.org/article/Anthropocene

³ Ursula Franklin is a Canadian scientist, pacifist, scholar and public intellectual. She is a companion of the Order of Canada and a Fellow of the Royal Society. In 2006, she published a collection of her essays and lectures entitled *Pacifism As a Map: The Ursula Franklin Reader* by Between the Lines in Toronto. Many of her writings address the history of science and technology and Canadian environmental policy issues. See Franklin, U. 1990. *The Real World of Technology*. CBC Massey Lectures. Canadian Broadcasting Corporation: Toronto and Franklin, U. 2006. *Pacifism As a Map: The Ursula Franklin Reader*. Between the Lines: Toronto.

⁴ Franklin 2006, 23,140,141

⁵ *The United Nations Conference on Environment and Development* (UNCED) was widely criticized by environmentalists for leaving justice out of discussions of sustainable development and for leaving a host of other political and normative issues “un-said.”

⁶ See McNeill, J.R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth-Century World*. W.W. Norton & Company: New York.

⁷ For the history of how this aversion toward numbers was overcome see Crosby, A. 1997. *The Measure of Reality: Quantification and Western Society, 1250-1600*. Cambridge University Press: New York.

⁸ Heincke, F. (1898) *Naturgeschichte des Herings I. Die Lokalformen und die Wanderungen des Herings in den europaischen Meeren*, *Abhandlungen des deutschen Seefischerei-Vereins* (pp.72,73) translated in Sinclair, M. and Solemdal, P. (1988) The development of ‘population thinking’ in fisheries biology between 1878–1930, *Aquatic Living Resources*, 1, pp. 189–213.

⁹ Franklin 141

¹⁰ Hirsh, R. 2011. *Historians of Technology in the Real World: Reflections on the pursuit of policy-oriented history*. *Technology and Culture*. 52(1):6-20.

¹¹ Zelizer, J. 2000. *Clio’s Lost Tribe: Public Policy History since 1978*. *Journal of Policy History*. 12:369-94. Zelizer identifies five types of historical research that have developed in the policy studies field which consist of historians providing historical perspectives on (1) Institutional and cultural persistence; (2) Political cultures; (3) Policy process evolution; (4) Lost alternatives; and (5) Policy correctives that have worked in the past.

¹² For those who fear an anti-science rant or volley in the science wars you can rest assured. Following Wendell Berry, I am more concerned to question science unaware of its limits and possible perverse consequences rather than science *per se*. I think this is especially important during the Anthropocene. See Berry, W. 2001. *Life is a Miracle: An essay against modern superstition*. Counterpoint Press, Washington, D.C.; Cayley, D. (Ed). 2009. *Ideas on the Nature of Science*. GooseLane: Fredericton, NB., and Shapin, S. 2010. *Never Pure: Historical studies of science as if it was produced by people with bodies, situated in time, space, culture, and society, struggling for credibility and authority*. The Johns Hopkins University Press: Baltimore, MD.

¹³ University of Sterling Research Centre for Environmental History and Policy. Accessed online on March 22, 2011 at <http://www.cehp.stir.ac.uk/>. There are two commercial ventures associated with the centre including *History Tomorrow* and the *Virtual Landscape Centre*.

¹⁴ University of Sterling Research Centre for Environmental History and Policy. *What is Environmental History?* Accessed online on March 22, 2011 at www.cehp.stir.ac.uk/research-centre/index.php

¹⁵ *Ibid*

¹⁶ *Ibid*

¹⁷ Merchant, C. 1980. *The Death of Nature: Women, ecology, and the scientific revolution*. San Francisco, Harper & Row. (pp.248-51).

¹⁸ See Evernden, L. L. N. 1992. *The Social Creation of Nature*. Baltimore, Johns Hopkins University Press and (1993). *The Natural Alien : Humankind and environment*. University of Toronto Press: Toronto, ON

¹⁹ See Paehlke, R. and D. Torgerson. 1990. *Managing Leviathan: Environmental politics and the administrative state*. Broadview Press: Peterborough, ON and Scott, J. C. 1998. *Seeing Like a State: How certain schemes to improve the human condition have failed*. Yale University Press: New Haven

²⁰ Polanyi, K. (1957). *The Great Transformation: The political and economic origins of our time*. Beacon Press: New York,

²¹ Crosby, A. 1993. *Ecological Imperialism: The biological expansion of Europe 900-1900*. New York, Cambridge University Press; Sachs, W. 1999. *Planet dialectics : essays on ecology, equity, and the end of development*. Zed Books: New York and Shiva, V. 1993. Resources. *The Development Dictionary*. W. Sachs. Zed Books: New York.

²² Neimark, P. and P. Mott. 1999. *The Environmental Debate: A Documentary History*. London, Greenwood Press and Cortner, H. and M. Moote. 1999. *The Politics of Ecosystem Management*. Washington, D.C., Island Press.

²³ The preservationists were led by John Muir who argued for the aesthetic, spiritual and intrinsic values of nature as opposed to the use-values advocated by Pinchot. The famous and influential arguments between American conservationist Gifford Pinchot and preservationist John Muir, at the beginning of the twentieth century, turned on radically different valuations of the role management should play in nature. Pinchot advocated a hands-on maximum-use model grounded in utilitarian scientific resource management, while Muir promoted a hands-off anti-management stance invoking the ideal of wilderness, where wilderness was conceptualized as a place devoid of permanent human presence and influence. See Pinchot, G. 1910. *The Fight for Conservation*. Harcourt Brace: Garden City and Pinchot, G. 1947. *Breaking New Ground*. Washington, D.C., Island Press. pp.505

²⁴ Luke, T. 1999. Eco-Managerialism: Environmental Studies as a Power / Knowledge Formation. *Living With Nature: Environmental Politics as Cultural Politics*. F. Fisher and M. Hajer. Oxford University Press: New York. pp.132.

²⁵ Rogers, R. 1997. The Atlantic Fishery. *Political Ecology: Global and Local*. R. Keil, D. Bell, P. Penz and L. Fawcett. Routledge: New York.

²⁶ Kay, J., H. Regier, et al. 1999. An Ecosystem Approach for Sustainability: Addressing the challenge of complexity. *Futures*. 31: 721-742.

²⁷ See Harding, S. 1992. *Whose Science? Whose Knowledge? Thinking from women's lives*. Cornell University Press: Ithica.

²⁸ Wilson and Bryant include States, Environmental NGO's, Transnational Corporations, International Financial Institutions, Farmers, Fishers, Nomadic Pastoralists, Shifting Cultivators, and Hunter and Gatherers in their expansive definition of environmental managers. See Wilson, G. and R. Bryant (1997). *Environmental Management: New Directions for the Twenty-First Century*. UCL Press: London. pp. 9

²⁹ Berkes, F., C. Folke, et al. 1998. *Linking social and ecological systems : management practices and social mechanisms for building resilience*. Cambridge University Press: New York. pp. 13

³⁰ It is important to stress that resource and environmental management continues to be primarily focused on optimizing the exploitation of the world's resources by a handful of highly developed regional and municipal sites. See Luke 1999

³¹ See William Beinart & Lotte Hughes. 2007. *Environment & Empire*. Oxford University Press: New York.; Ramachandra Guha. 2000. *Environmentalism: A Global History*. Longman: New York.

³² See Terry Birtles. 2002. Review of S. Dovers (Ed.) 2000. *Environmental History and Policy: Still Settling Australia*. *The Geographical Journal*. 168(3): 275-6.

³³ Wilson, D. C. 2009. *The Paradoxes of Transparency: Science and the Ecosystem Approach to Fisheries Management in Europe*. MARE Publication Series No. 5. Amsterdam: Amsterdam University Press.

³⁴ Gregory T. Papanikos. 2006. *The Use of History as a Tool of Policy-Making*. Opening Speech at the 4th International Conference on History: From Ancient to Modern. Athens, December 28-31, 2006. National Archaeological Museum of Athens. Accessed on March 12, 2011 at www.atiner.gr/docs/Paper25_History.doc

³⁵ Hirsh 6

³⁶ *Ibid* 7

³⁷ *Ibid* 7, 8

³⁸ *Ibid* 8

³⁹ *Ibid* 20

⁴⁰ *Ibid*

⁴¹ *Ibid*

⁴² See Illich, I. 2009. The Shadow our Future Throws. *New Perspectives Quarterly*. 26:80-89. The article is based on an interview conducted with Illich in 1989.

⁴³ Ivan Illich (1926-2002) was an Austrian philosopher, Roman Catholic priest, and critic of technological society and the unacknowledged axioms of the modern mind.

⁴⁴ Ivan, I. 1980. *Vernacular Values*. Letter to Stewart Brand editor of the *Co-Evolutionary Quarterly*. Accessed on March 22, 2011 at: www.davidtinapple.com/illich/1980_vernacular_values.html#REPRESSED

⁴⁵ *Ibid*

The *first* option set represented by the Left-Right axis in Figure A involves choices “related to social hierarchy, political authority, ownership of the means of production and allocation of resources.” This political and economic set of options lead to questions such as: Should ownership be primarily in the public or the private sphere? Should natural resources be allocated competitively through markets or be regulated by the State? Environmental historians exploring the Left-Right axis have shown how political organization and the ownership of resources (e.g. public, private, collective) influence the character and pace of environmental change. The *second* option set represented in Figure A by the vertical Hard-Soft axis involves “technical choices between hard and soft, extending these terms far beyond a pro and con atomic power: not only goods, but also services are affected by the hard and soft alternatives.” Environmental historians have shed light on the differences between hard and soft technologies and the impacts of industrial technology on the environment and human health. The *third* option

set is of a different kind than the previous two yet the distinction it makes is often overlooked. This axis represented in Figure A by the Vernacular on one end and Industrial on the other involves social choices related to the nature of human satisfaction.

⁴⁶ Illich, I. 1980. *Shadow Work*. Marion Boyars: Boston. pp. 11-12.

⁴⁷ See Shiva, V. 2008. *Soil Not Oil: Environmental Justice in a Time of Climate Crisis*. South End Press: New York and the *La Via Campesina* website at www.viacampesina.org/en/

⁴⁸ Illich 2010, 13

⁴⁹ *Ibid* 17

⁵⁰ Illich, I. 1985. *H2O and the Waters of Forgetfulness: Reflections on the Historicity of Stuff*. Dallas Institute of Humanities & Culture. Dallas, TX.

⁵¹ A brief sampling of works I have found helpful on the topic of vernacular environmental history include: Smith, M. 2007. *Sensing the Past: Seeing, Hearing, Smelling, Tasting, and Touching in History*. University of California Press: Berkeley, CA.; Bocking, S. 2004. *Nature's Experts: Science, Politics, and the Environment*. Rutgers University Press: New Brunswick, NJ; as well as the UBC Press Nature/History/Society series especially Linton, J. 2010. *What is Water? The history of a modern abstraction*. UBC Press: Vancouver, B.C.; Cruikshank. *Do Glaciers Listen? Local knowledge, colonial encounters, and social imagination*. UBC Press: Vancouver, B.C.; and Parr, J. 2010. *Sensing Changes: Technologies, environments, and the everyday, 1953-2003*. UBC Press: Vancouver, B.C.

⁵² See Bavington, D. 2010. *Managed Annihilation: An unnatural history of the Newfoundland cod collapse*. UBC Press: Vancouver, B.C. and Bavington, D. and Samuel, S. 2010. Energy and Equity in World Fisheries. *International Journal of Illich Studies*. 2(1): 55-64.

⁵³ Illich 2010, 18

⁵⁴ Illich 2009, 84

⁵⁵ Illich, I. 1978. *Toward a History of Needs*. Pantheon: New York. 24

⁵⁶ *Ibid* 27

⁵⁷ *Ibid* 28

⁵⁸ See Illich, I. 2010. The Social Construction of Energy. In. *New Geographies 2: Landscapes of Energy*. Ed. Rania Ghosn. Harvard University Press, Cambridge, Mass. 11-19. Illich explains the historical connection that exists between the assumption of universal scarcity and the conservation of energy in the following. "Historically and psychologically, the rule that nature, like citizens of the nineteenth century, must live in the matrix of a zero-sum game was prior to the value at stake in this game. Only then did that value take the form of a function, namely, "e," or a "goody." Progress in the social sciences went in the same direction. Social interactions were reduced to exchanges, and subjects to role players between whom these exchanges take place. The perfectly neutral medium of exchange is implied in all science based on conservation, and energy is its paradigm" (19).

⁵⁹ Illich 1980, 78

⁶⁰ *Ibid* 78

⁶¹ *Ibid* 94

⁶² *Ibid* 95

⁶³ Papadopoulos, D. 2010. Alter-ontologies: Towards a constituent politics in technoscience. *Social Studies of Science*. 41(2):177-201. pp. 193

⁶⁴ Hirsh 20

⁶⁵ Franklin 366