THE CLIMATE OF UNKNOWING

A Twelve Story Response to the West's Industrial Warming

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Abstract

There is a disruptive uncertainty surrounding today's climatic changes which confronts Western interdisciplinary science with a situation where it continues to increase knowledge, but barely narrows the range of uncertainty. With over 80 percent of post-industrial greenhouse gas emissions originating from Western nations, much of this scientific uncertainty is intertwined with the political economics, beliefs and behaviours of this culture. The global scale of this Western climatic uncertainty is also disrupting other cultural knowledges, such as Inuit who have found their northern ecology, knowledge and lives compromised by largely far-removed Western actions. Because these northern changes are important for understanding changes in the global climate system, scientists have engaged dialogues with Inuit ecological knowledge at the same time that the integrity of this cultural knowledge is challenged. The West's climatic uncertainty seems to be proliferating both interdisciplinary and intercultural dialogues. While the Intergovernmental Panel on Climate Change's interdisciplinarity and the Kyoto Protocol's internationalism are symbolic of this trend, they ultimately limit the range of intercultural and historical voices heard due to the continuation of Western assumptions that are intertwined with the onset of these climatic changes. In following the implications of interdisciplinarity into intercultural dialogues with Inuit and into an alternative Western view on historical climate changes (e.g. Medieval Warming Period, Little Ice Age), this dissertation proposes that today's changes primarily challenges the West to re-orient its historically lengthy beliefs, fossil fuel behaviours and responses towards a capacity for socializing with the climate system's complex processes.

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With every warmer-than-usual season, day of record-breaking heat, destructive hurricane or melting glacier, a cacophony of human voices arises into a debate about the nature and danger of today's climatic changes. Global interdisciplinary research initiatives continue to significantly increase knowledge about these changes, but because the science has "scarcely narrowed the range of uncertainty"[1] a skeptical view of the human impact on the climate system has continued to persist. This perplexing research situation, where both knowledge and uncertainty are on the rise, is attributed by the climate modeler Gerard Roe to these changes being akin to "predicting the outcome of a disease based on only one patient".[2] Clarifying this disruption of scientific objectivity, the climate physicist Spencer Weart states that in predicting climate change "you would first have to predict changes in CO_2, methane, and other greenhouse gases", and these changing emissions "depend less on geochemistry and biology than on human actions".[3] Weart proposes that the impact of human actions means the future climate "actually does depend in part on what we think about it. For what we think will determine what we do".[4] Since almost 80 percent of the cumulative greenhouse gas (GHG) emissions released into the atmosphere since 1990 have been produced by developed nations like the United States, Canada and those of the European Union,[5] Weart's "we" at the center of this uncertainty essentially refers to the political economics, scientific knowledge, beliefs and behaviour of Euro-American cultures. It is this "Western" uncertainty which confronts the objectivity of science with an interdisciplinary challenge: how to research "our" political economics and cultural beliefs as the most relevant uncertainty to be clarified in developing an effective response to today's climatic changes.

The global scale of Western political economic actions means that its climatic uncertainty is also disrupting other cultural ways and knowledges. With the Arctic and sub-Arctic being the proverbial "canary in the mine" for assessing global climate change, Inuit have found their ecology, knowledge and lives compromised by largely far-removed Western actions. Reflecting on this situation, Mark Nuttall and Terry Callaghan state that "the emission of greenhouse gases such as carbon dioxide, arise almost completely outside the Arctic yet may contribute to a gradual warming of the Arctic's surface as well as affecting the health of human and animal populations there".[6] The detailed ecological literacy of Inuit knowledge or *Inuit Qaujimajatuqangit* (IQ) has also brought increasing numbers of researchers into northern dialogues about these changes.[7] IQ is described by Riedlinger and Berkes as important to climate science for at least three reasons: the Arctic is an early ecological indicator of climate changes, science has insufficient knowledge "of physical and ecological processes in the Arctic" and there is a lack of historical baseline data against which to measure data".[8] These difficulties lead them to propose that IQ can be helpful to scientists since its "assessments of change are based on cumulative knowledge of local trends, patterns, and processes, derived from generations of reliance on the land".[9] This evolving intercultural climate research led me to dialogue with Inuit in Nunavut. It is in this Canadian territory that I heard Andre Tautu voice concern about the impact of these changes on IQ:

> IQ was real at the time because the planet was not changing. They knew what was going to happen to the weather for four seasons. But today the weather has so changed that IQ is pretty much gone, it can no longer predict because of the change in climate.

Later he added, "I don't want to scrap IQ – it's been real for generations, but it's changing". Andre's[10] suggestion that the climate system and IQ are in mutual states of flux offered my research an Inuit perspective on the West's disruption of climates, ecologies and cultures, while also suggesting that cultural knowledge needs an ecological malleability for re-assessment based on a historical baseline. While ecological knowledge of past trends is

important to climate research, of equal importance to an analysis concerned with the West's climatic uncertainty is the cultural evolution of the perspective that is driving these disruptive changes.

After examining post-Enlightenment changes in Western thought on the climate, James Fleming concludes "there have been many global changes in our relationship to nature and that history, climate, and culture are closely interwoven".[11] The current difficulty for climate science is, in Fleming's view, due to a mismatch between a complex atmospheric phenomenon that deeply intertwines human actions, and an objective science still largely concerned with reducing these ecological processes "to their equations of motion, chemical constituents, or other manageable components".[12] J. R. McNeill's environmental history also concludes that the common Western approach of historians marginalizing ecological processes and environmental scientists marginalizing cultural history reinforces an incomplete and misleading vision of viable environmental responses. While McNeill proposes that an adequate response requires recognizing that "history and ecology are, as fields of knowledge go, supremely integrative",[13] Fleming concurs by offering the opinion that a more complete understanding of climate change's human dimensions will require historical studies that can highlight "the intellectual, social, and cultural roots of environmental issues".[14] Research which is concerned with a viable response to the West's climatic uncertainty must necessarily engage historical trends to critically discriminate between implicated cultural practices and those that may prove ecologically adaptive.

Though Western science largely associates the onset of today's climatic changes with the fossil fuel dependency that began with the nineteenth century Industrial Revolution, Gary Gardner's *State of the World* essay pushes the implicated Western forces back a few centuries. He views the divergence of science and religion that marked the Enlightenment, and made science "the authoritative source for some of humanity's grandest questions", as being intimately related to contemporary environmental and social issues.[15] The implication is that

the West's climatic uncertainty is a function of an unsustainable relation between science and religion over the past few centuries. As with Gardner, Carolyn Merchant argues that to understand the West's environmental crisis it is necessary to "reexamine the formation of a world view" that influenced science, technology and the economy, but adds that a viable Western response will also need to consider the ecological adaptability of "alternative philosophies, and social groups shaped by an organic world view" which resisted the arising Enlightenment assumptions.[16] Researching such an alternative Western history, Morris Berman highlighted the difficulty of conducting this project in a modern atmosphere that "regards the thinking of previous ages not simply as other legitimate forms of consciousness, but as misguided world views that we have happily outgrown".[17] To challenge this assumption I follow the lead of Berman and Merchant into a pre-Enlightenment hermetic view on the West's climatic uncertainty that provides insight into researching a sustainable cultural alternative. Before clarifying the climatic relevance and historical scope of such a hermetic approach, it is helpful to first engage an overture to the strengths and limitations in Western interdisciplinary research and intercultural IQ dialogues that, as my research's three methodological acts, aim to answer two basic questions: What is the West's climatic uncertainty? and, How to respond to this uncertainty?

Act I: Climatic Thinking

My inquiry into these questions began with the interdisciplinary science represented by the *Intergovernmental Panel on Climate Change's* (IPCC) definition of climate change as a function of various ecological processes that include "the dynamics and composition of the atmosphere, the ocean, the ice and snow cover, the land surface and its features, the many mutual interactions between them, and the large variety of physical, chemical and biological processes taking place in and among these components".[18] Despite the wonderfully complex vision offered by this interdisciplinary methodology, Weart finds climate science to still be too

limited by the prevalence of disciplinary specialists during a time of "labor to understand increasingly complex topics".[19] He states that since the "Earth's climate system is so irreducibly complicated that we will never grasp it completely", climate research needs to be equally intricate in its intertwining of the physical and social sciences.[20] In an analysis of the rise of interdisciplinary science, Peter Weingart explains that for much of the twentieth century it was believed that the "unity of science would be achieved at some distant moment in time by way of reducing all fragmented disciplinary knowledge to the fundamental laws of physics", but this belief slowly gave way to a more modest "recombining of different parts of knowledge".[21] With environmental science, the stock of such an interdisciplinarity escalated as the twentieth century motivated calls for social regeneration through a more responsive science.[22] By following the evolution and challenges of interdisciplinarity, I will begin to clarify this first methodological act.

The American history of conservation offered by Arthur McEvoy represents this evolution towards interdisciplinarity as four distinct phases that define the transformation of conservation in the nineteenth and twentieth centuries: laissez-faire, Progressive Era, "tragedy of the commons" and the latest interactive theory of nature and culture.[23] For this analysis, the historical specifics of these stages are secondary to McEvoy's main point that this evolutionary trend towards an intricate integration of the physical and social sciences was in response to increasingly complex conservation issues. He concludes by asserting that future assessments of complex environmental changes will need to "account for the mutually constitutive nature of ecology, production, and cognition", for to "externalize any of the three elements" in isolation "is to miss the crucial fact that human life and thought are embedded in each other and together in the non-human world".[24] The potential disruption of climate change seems to follow this historical pattern, such that the complexity of the problem combined with the need for a political economic response spurs on interdisciplinary research like the IPCC. In explaining why this evolution towards "more sophisticated and inclusive" approaches has to

date had so little overall conservation success, Raymond Rogers concludes that the simultaneous global expansion of Western political economic forces has shrunk "the actual institutional and legal capacity to underwrite these expanded mandates".[25] This conflict between science and political economics is also a significant difficulty in researching and responding to the West's climatic uncertainty, despite the move towards greater interdisciplinarity. Added to this external pressure on a mutually constituted climate research act is an internal pressure, a firmly entrenched disciplinary academic environment which is skeptical of interdisciplinarity. These are the challenges this interdisciplinary research act needs to methodologically address in its approach of the West's climatic uncertainty.

My interdisciplinary response to this challenge began in Canada's oldest *Environmental Studies* program at York University in Toronto, established in 1968. In one of its defining documents that collects a number of essays on the nature of environmental studies, the program is described as employing an interdisciplinarity "that brings disciplines together in" a spirit of mutual reciprocity which is "substantially different from a 'multidisciplinary' approach" that does not focus on the points of interrelation.[26] In this interdisciplinary methodology both the specialization of disciplinary knowledge creation and professional interventions are viewed as valid activities, though the caveat is added that disciplinary knowledge needs to be contextualized by a complex world that is responsive to human actions.[27] Klein similarly argues that effective interdisciplinarity must ensure that its general patterns are "supplemented with details of specific connections and more finely structured elements" documented by rigorous disciplinary research so that "generality and particularity coexist".[28] The complex uncertainties that surround disciplinary knowledge shift the sense of environment from an object(s) to an adjective that can "be understood as modifying both that which is to be studied and also the manner in which it is to be studied".[29] This environmental studies document describes McEvoy's mutual constitutability as environmental thinking, a "relatively undeveloped" idea in the West which is defined in the following way: "subject

matter has an intrinsic form of thought as well as content, and that the environmental context of substantive concerns may be used to determine form of thought".[30] This intriguing methodological proposal offers a way of interconnecting the two questions of this research so that the West's climatic uncertainty comes to regenerate an interdisciplinarity that can think and respond to the mediating changes of the climate system. To more deeply define this idea in relation to the methodology of this act it is helpful to engage a couple influential researchers in environmental studies.

The eminent Canadian conservationist and co-author of the Environmental Studies document, John Livingston, wrote of the late-twentieth century environmental crisis as emerging from the dominant forms of Western consciousness. Broadening the critique of disciplinary assumptions, Livingston explains that Western consciousness has been narrowed by an ideological, technological, structural and social isolation from nature that assumes "the necessary primacy of the human enterprise".[31] He describes this predilection as a cultural belief that instills rationality with an air of infallibility despite its interconnections with today's environmental disruptions:

> With conceptual and technical skills the likes of which have never before emerged on Earth, and with unequalled powers of abstraction, the problem animal has become enabled not only to consume or obliterate elements of non-human Nature at virtually its slightest whim, but also to rationalize that activity in comfortably reassuring terms.[32]

Meanwhile, the environmental studies of Neil Evernden also relate the environmental crisis to a Western objectifying disciplinarity which changes nature into knowledge products that can be owned, controlled and manipulated. While not arguing "that objectivity is in itself an evil to be abolished", Evernden does view environmental issues as connected to an ever-expansive objectifying consciousness that sets the world "apart to be operated upon at centre stage, through the universal tool of purposive thought".[33] His perspective suggests that the West's

climatic uncertainty arises from a cultural separation of nature and humanity, and it is this cultural approach to science and political economics which manifests the environmental crisis as "a visible manifestation of our very being".[34] Both the thought of Evernden and Livingston suggest to this act a climatic thinking which is defined by an interdisciplinarity that is aware of ecological relations as they interact with the ideas, methods and political economics of this culture. In other words, climatic thinking is a methodological act which contextualizes isolated disciplinary knowledges within specific interdisciplinary analyses of the West's climatic uncertainty. While each chapter in this act is historically limited by the onset of a disciplining Western mind associated with the eighteenth century Enlightenment and the ensuing nineteenth century Industrial Revolution, their subject matter arises from four contemporary, influential and interacting Western views on climate change.

The first chapter looks at the evolution of science towards the IPCC as a means for considering trends that can deepen a climatic thinking of today's uncertain changes. In the next chapter, this emerging climatic thinking engages the skeptical critique of climate change science as symbolically embodied by the United States' Republican White House and President George W. Bush. This is followed by an assessment of the Kyoto Protocol and conflicting international pressures in the context of Canada's late-twentieth century failed Liberal response. The act concludes with the consideration of the Earth Charter as an intercultural religious approach that can deepen a climatic thinking of the West's uncertainty. Each of these chapters interact to create an interdisciplinary language that, as Klein states, emerges through a "negotiation of meanings" that does not create "an artificial unity that eschews differences", but rather is based upon an exchange between disciplines which "depends on difference".[35] It should be noted that this act also gravitates towards my Canadian context, though the continental pressure of United States' Republicanism, the global influence of international liberal policy and Europe's historical impressions on Canada offer a sense of the broader influence of Western Euro-American forces.

The purpose of these four chapters in climatic thinking is twofold. First, each chapter offers a view on patterns in Western thought, methodology and political economic actions which limit an adequate understanding of and response to the West's climatic uncertainty. Second, the positives and negatives of these patterns help to highlight an answer to my opening two questions concerned with the nature of this uncertainty and a viable response. The many places where my climatic thinking has difficulty answering these questions are, simultaneously, my point of entry into Inuit and hermetic acts that attempt further clarification. This introduction now focuses upon the relevance, scope and methodology of a second act which goes north to engage IQ in an intercultural dialogue that complements my climatic thinking.

Act II: IQ Dialogues

Re-defining climate change as a Western uncertainty means Andre's earlier statement about IQ's inability to predict is only secondarily related to regional ecological changes, and primarily to the global power of Western culture. Rogers describes a similar process to that which is now challenging IQ by drawing upon Livingston's critique in an environmental studies analysis of Canada's east coast fishery collapse of the late-twentieth century.[36] As individuals became more disconnected from a host of ecological and community relations that have lost their viability to sustain lives, he explains that people became increasingly dependent upon national political institutions that were to manage and re-train them for a new way. Many of the assumptions underlying both the national and global mismanagement of the fisheries came to manage the lives of people whom he ironically refers to as the "newly stupid".[37] These are communities which can no longer support themselves without being re-aligned to Western developments. With ecological relations marginalized, Rogers explains that the West's environmental disruption of the fishery presaged "the collapse of the modern human relation with the natural world".[38] Following his guidance, my initial engagement with Inuit was

concerned with IQ's understanding of ecology, climate and Western culture in the context of today's disruptive changes on their ways of living. As with the first act, my point of departure towards Canada's Inuit territory of Nunavut was mediated by environmental studies.

Though the role of fossil fuels in climate change was in its infancy when Livingston wrote his book about oil development in Inuit territory,[39] his critique is still poignant because it deals with the same ecological uncertainty that today leads climate research into dialogues with IQ. Livingston starts his analysis by making it clear that the vulnerability of Arctic ecosystems to Western development is not due to some inherent natural weakness, but rather is a function of it being an ecology composed of a limited number of plant and animal species that manifest unpredictable extremes. During the last decades of the twentieth century Livingston saw this delicate ecological balance come into a more tightly coupled relation with foreign Western industrial practices. He states that these practices were informed by natural scientific knowledge based in temperate regions which "are the most resilient" at absorbing "human insults" than any other ecology on Earth.[40] Recognizing this ecological mismatch, Livingston concluded that saving the Arctic will not be based upon technical solutions that simply reduce environmental impacts in a context of sustained development because "there can be no technical answer to a moral problem".[41] As the West's climatic uncertainty impacts the Arctic over two decades later, the poignancy of Livingston's critical conclusion is still apparent in this culture's dedication to increasing a "dwindling oil supply" through securing Arctic and Mid-East resources, "the refinement of exploration technology" and "greater capital investment".[42] Clarifying the climatic dimensions of Livingston's moral problem in relation to the United States' domestic debate on oil development in the *Arctic National Wildlife Refuge* (ANWR), Bill McKibben points out that even though an "oil spill may not happen in ANWR" the eventual emissions of these gases will create a spill "in the atmosphere".[43]

The West's atmospheric spill that today haunts Inuit with climatic changes is merely the latest environmental ill which began migrating northward with the Cold War mobilization

of forces in the Arctic, followed by the biological effects of nuclear waste and the biomagnification of persistent organic pollutants into animals and people.[44] The northern effects of the West's climatic uncertainty are documented by an IPCC *Third Assessment Report* (TAR) which describes a 10 percent reduction of snow cover since 1972, increases in precipitation, reductions in the extent of sea ice, thinning of sea ice, thawing of permafrost and erosion, northward movement of the tree-line, decreases in water availability, increased susceptibility to forest fires and seasonal onset changes.[45] In 2004, the *Arctic Climate Impact Assessment* (ACIA) extended the details on many of these findings by bringing together interdisciplinary climate science with research that has embraced northern Native knowledges like IQ.[46] From such intercultural climate research come IQ elder interpretations of the quickly changing weather as the "Earth moving faster"[47] and *uggianaqtuq* - "acting unexpectedly or in an unfamiliar way".[48] These unfamiliar changes are revealed to Inuit by fluctuations in ice and open water, melting permafrost, precipitation increases, warmer summers and shorter winters, unpredictable seasons, new species of fish and birds, shifting polar bear behavior and increases in thunder and lightning.[49] The direct effect of these changes on hunters include softer snow that makes travel harder, the danger of unpredictable ice, the uncertainty of strange weather and the disruption of animals.[50] These potential ecological and cultural impacts of climate change bring Inuit to the verge of becoming part of that growing population of the "newly stupid" that Rogers proposes follows in the disruptive wake of Western developments.

Though this second act is concerned with the ecological knowledge that has adapted the Inuit to the north for generations, it is primarily interested in a broader knowledge that was symbolized at a 1995 elder conference where IQ was defined as "practical common sense; teachings and experience passed through generations; knowing the country; being rooted in spiritual health; a way of life; an authority system of rules for resource use; respect; obligation to share; wisdom in using knowledge; using heart and head together".[51] More recently, an Inuit-directed compilation more succinctly defined IQ as "knowledge that has been passed on

to us by our ancestors, things that we have always known, things crucial to our survival, patience and resourcefulness".[52] These definitions that contextualize IQ within the delicate balance of the Arctic ecology resonate with Hugh Brody's account of having his Western knowledge transformed by IQ after requesting the elder Anaviapik to teach him Inuktitut.[53] His wide-ranging lesson led to the realization that the common Inuktitut "use of words that mean perhaps and maybe" is a symbolic response to a changing environment where the economic system "depends on accuracy" and "speaking anything but the truth creates real dangers".[54] After surveying the ecological and cultural understanding that hunter-gatherer knowledges offer, he concludes these knowledges are desperately needed today and consequently "listening is what must happen, somehow, on every frontier, for only if the powerful listen will the needs and rights of the vulnerable be respected".[55] In this sense, the West's atmospheric spill calls me to a moral act of "listening" that is concerned with the mutually constitutable understandings of IQ as guides for dealing with cultural assumptions that limit my act of climatic thinking.

At the time of my increasing knowledge of Inuit and northern climate issues I attended a lecture given by Jaypeetee Arnakak on IQ as part of a *Sovereignty, Indigenous Knowledges and Environment* speaker series at York University. He was advertised as an Inuit policy analyst from Iqaluit, Nunavut who is an "articulate spokesperson for the relationship of IQ to governance, environmental management, and the adaptation of the Inuit way of life to the contemporary world". Within a few months of the lecture we began email dialogues that allowed me to engage Jaypeetee's offering of an IQ philosophy which explained the indivisibility of Inuit ways of living and spirituality, described IQ-based policy in a Canadian political economic context and accented his explanations with Western philosophy and science. This Inuk became my most important guide in a dialogue on the West's climatic uncertainty because of his ability to clarify the way in which IQ integrates ecological knowledge, political economic organization and spirituality. His explicit inclusion of spiritual understandings also highlighted the importance of ensuring that my act of climatic thinking

integrates physical and social sciences with prevalent Christian views that influence the West's climatic uncertainty. The progression of emails led Jaypeetee to also suggest some communities where first-hand accounts of elders and hunters could clarify and deepen his guidance. While not suggesting any specific community, his highlighting of the Hudson Bay west coast led me to correspond with the Mayor and Hamlet Council of Chesterfield Inlet. Within a few months it was agreed that I would deliver a two day workshop aimed at sharing Inuit and Western climate change knowledge in October 2004. During the preceding summer months, I prepared workshop materials that followed the direction of Jaypeetee in integrating northern climate science with an appreciation of IQ. As with our emails, my goal for the workshop was merely to follow Brody's advice and "listen" to an IQ view of climate change, and from that first step enter into a dialogue by offering relevant Western climate knowledge.

Upon arriving at the community's Hamlet Council office and querying about a potential workshop co-facilitator and translator, Simionie Sammurtok was recommended because of his concern about climate change and his leadership as President of the local *Hunter and Trapper Organization*. After he agreed to take on this role, we began looking over the workshop materials to plan the first day. Simionie proposed the workshop begin by displaying the map I brought of Canada's projected regional average temperature changes over the next 50 years. The image struck him, and he thought it would draw people into a dialogue about their observations, concerns and understandings. Sitting around the table with myself and Simionie over the two days were Andre Tautu, Eli Kimmaliardjuk, Louis Autut, Casemir Kriteedhuk, Elizabeth Tautu, Bernie Putulik and Mark Amarok, a group consisting of elders, hunters and a northern Ranger. With the map on the screen at the front of the room, Simionie explained that their community is on the cusp of experiencing the most significant warming in the country, somewhere between 4 to 6°C within five decades.

While my initial thinking about northern climate changes was influenced by environmental studies, my act of IQ dialogues with Jaypeetee and the workshop participants

largely drew methodological inspiration from the postcolonial theory of the Maori scholar Linda Tuhiwai Smith.[56] For Smith, the impact of Western colonization and the goals of its research are deeply interconnected. As with Rogers' "newly stupid", she explains that colonial power relations have disconnected Native people from "their histories, their landscapes, their languages, their social relations and their own ways of thinking, feeling and interacting with the world".[57] Native people have undergone a "systematic fragmentation" that is today reflected "in the disciplinary carving up of the indigenous world".[58] In her view, the insulation provided by "what are known as disciplinary boundaries" maintains a knowledgeable ignorance among researchers about the breadth and nature of these colonial developments in academia.[59] Western research that uses discipline as a tool for maintaining objectivity is experienced by those who are being researched as a disciplining process that, Smith states, is marked by "exclusion, marginalization and denial" of Native knowledge.[60] The methodological implication for these IQ dialogues was that my climatic thinking needed to be wary of assuming the "innate superiority" of a Western knowledge which is often used to reduce the knowledge of Native peoples.[61]

The critical analysis of Bruno Latour offers a penetrating insight into this issue by pointing out that it is the cultural power of the Western "objectivist paradigm" that has traditionally allowed scientists to discount other cultural knowledges as "primitive" or "mistaken".[62] The result has been two Western divisions, the Internal Great Divide and the External Great Divide. As with Livingston and Evernden, Latour's first Great Divide allows the separation of nature from Western culture so that the formers parts can be researched, controlled and managed. Out of this unique differentiation of "Nature and Culture" comes a second divide which views other cultural knowledges as incapable of separating "what is knowledge from what is Society".[63] Despite its many negative social impacts, power abuses and failed colonial agendas, Latour states that Western culture can "escape from the prison of the social or of language to gain access to things themselves through a providential exit gate,

that of scientific knowledge".[64] This Western way of research that denies an interconnection to shifting ecologies and other cultures disconnects the researcher from anything which could disconfirm the assumed disciplinary categories. While Western research marginalizes Native knowledge that does not fit disciplinary categories, the disciplining Western political economy further disconnects people from their knowledge. The West's climatic uncertainty exemplifies these corresponding trends in a changing northern ecology that leads Western researchers like me to engage IQ at the same time that Andre expresses concern about the future viability of this cultural knowledge.

Responding to the critiques of Smith and Latour requires a methodological act to hold Western research assumptions in check while listening to IQ. Smith offers a possible option for meeting this challenge by transforming research into a sharing of knowledges that provides a broader sense of how information is "constructed and represented".[65] Rather than just giving Inuit information from the ACIA or IPCC, she proposes that responsible research with Native peoples needs to engage a social exchange that includes an accessible dialogue on theoretical and cultural assumptions. The postcolonial thought of Charles Menzies extends Smith's analysis to Western researchers, but with the caveat that findings will only be responsible and representative when the methodology is changed "so that it becomes part of a process of decolonization".[66] He describes the power of this "native anthropology" as emerging "out of the values and assumptions of the oppressed group" so that they can "reflect and describe their own experiences" rather than being based upon Western assumptions.[67] These methodological critiques influenced my dialogues with Jaypeetee and the Chesterfield Inlet participants as I listened to Inuit stories, asked about Inuktitut conceptual meanings and stayed attentive to IQ.

There is one final methodological point made by Smith that influences these IQ dialogues and their interaction with the other two acts. As in the first act's interdisciplinary contextualizing of disciplinary research, Smith explains that decolonizing research "does not mean and has not meant a total rejection of all theory or research or Western knowledge".[68] In

contrast, she proposes "it is about centering our concerns and world views and then coming to know and understand theory and research from our own perspectives and for our own purposes".[69] Early in our emails Jaypeetee also made it clear that he did not want to reject Western knowledge, but rather desired a more extensive dialogue:

> IQ analysis may not be as exact as the formal scientific method, but the accumulated experience that's embedded in the culture nonetheless has a keen sense of well-formedness in terms of the terrain, ecology and weather within which it occurs.[70]

Later in Chesterfield Inlet, many of the workshop participants also voiced a desire for a more representative assessment of climate change through a sharing of IQ with Western knowledge. After observing various climate science graphs, Bernie Putulik said that he was seeing similar changes and wanted "to talk about the IPCC predictions and then compare our knowledge from the community". Both Simionie and Andre agreed, but clarified that a more equal relationship between IQ and Western knowledge was needed for this dialogue to offer a better assessment of climate change. These various Native critiques, which are further assessed in this act's chapters, suggest that the assumed objective superiority of Western disciplines needs to be transformed into a sharing methodology that can blend interdisciplinary climatic thinking with intercultural IQ dialogues.

To represent these IQ dialogues on the West's climatic uncertainty I followed Denzin and Lincoln's triangulation which utilizes multiple methods so as "to secure an in-depth understanding" that has "rigor, breadth, complexity, richness, and depth".[71] This act brings together three methods that reveal common patterns. The first extends the climatic thinking of the first act through critical analyses of northern physical and social science relevant to IQ and these changes. This northern research is brought together with the dialogues from the Hudson Bay coast which offer two days of climatic observations, and years of email correspondence with Jaypeetee that became the foundation for a deeper intercultural examination of ethnographic accounts, elder words, science, policy and climate change. As well, the workshop

participants consented to having Jaypeetee read and guide my understanding of the transcripts. The patterns and contrasts from this triangulation interact to offer four IQ dialogue chapters which are based upon important concepts and stories that challenge Western assumptions about what it is to think climatically about today's northern and global changes. While these chapters inspire another cultural way of thinking about the West's climatic uncertainty, it is also true that the mutual constitutability of IQ to specific regional northern ecologies and historical developments limits Inuit guidance of me towards a more inclusive Western climatic thinking. This limitation makes it apparent that the West needs to historically re-think its environmental thought so as to resuscitate culturally and ecologically unique ways of responding to its globalizing uncertainty. Such a historical foray into Western climatic thinking is the basis of my third hermetic act.

Act III: Hermetic Contemplations

After considering some temporal dimensions of Native knowledges that contrasts the linear progression of Western colonialism, Smith equates decolonizing research with the examination of alternative historical perspectives.[72] Offering a parallel critique, Rogers concludes that becoming "newly stupid" entails being disembedded from local cultural knowledges that have historical and ecological depth for sustaining community living.[73] The east coast fishery case reveals the quickening of a "double disappearance where not only is the natural world disappearing in terms of species and habitat, but the human impetus to promote conservation because nature is part of us is also disappearing".[74] For Rogers an engagement of these historical forces requires "embedded alternatives which link humans and nature in viable social terms through the participation of subjects rather than the participation of objects".[75] In concert with the Western historical analyses of Berman and Merchant, these critiques inspire my third act of uncovering an alternative Western hermetic methodology for researching

today's post-Enlightenment climatic uncertainty in a way that links "humans and nature in viable social terms".

One common pattern recognized in many historical analyses of hermeticism is the impact of this tradition on the evolution of science.[76] While Keith Thomas explains that "hermetic ways of thinking had stimulated such crucial discoveries in the history of science as heliocentrism, the infinity of worlds, and the circulation of the blood",[77] Frances Yates states that the mechanical cosmos represented in Newton's laws of inertia and gravity were actually the hermetic cosmos "drained of its animism" and "understood objectively instead of subjectively".[78] Based on an analysis of Giordano Bruno, Yates argues that the evolving Enlightenment science of Francis Bacon and Isaac Newton was "clothed in what might be described as a Hermetic atmosphere".[79] Berman similarly proposes that this atmosphere where "subject and object, self and other, man and environment are ultimately identical" was gradually replaced by a "world mechanism".[80] This historical relation between Newtonian science, Enlightenment thought and hermeticism led Yates to re-define the scientific revolution as occurring "in two phases, the first phase consisting of an animistic universe operated by magic, the second phase of a mathematical universe operated by mechanics".[81] As with Berman and Merchant, Yates finds that an "enquiry into both phases, and their interactions" can deepen an understanding of the social problems related to the West's over-reliance on scientific and technological solutions – a suggestion also prevalent in research of the West's climatic uncertainty.

Examining the second phase of this scientific revolution that began with the Enlightenment, Berman asserts that even analyses based upon the tenets of empirical objectivity would recognize that "there was nothing scientific about this shift from Hermeticism to mechanism".[82] Clarifying this position, he states that the revolution "was not the result of a series of careful experiments on the nature of matter, and indeed, it is no more difficult to visualize the earth as a living organism than it is to see it as a dead, mechanical

object".[83] This lack of empirical validity guided Berman to an inquiry which found the appeal of mechanistic science to be related to it being more well-suited to the political forces of "bourgeois ideology and laissez-faire capitalism" which "triumphed in the second half of the seventeenth century".[84] Merchant likewise proposes that the "empirical philosophy of science" offered political economic powers a methodology for designing experiments that could unearth "secrets from nature", and in the process gain "mastery over its operations".[85] Returning to Berman's analysis, he adds that this relation between capitalism and science interacted with English Puritan values that repressed and sublimated sexual energy so as to create people who are "subdued in the face of authority, but fiercely aggressive toward competitors and subordinates".[86] These critiques imply that the three forces of science, capitalism and Christianity interacted to manifest the dominant features of today's Western culture, and its impact on the environment. As a way out of this unsustainable cultural approach Berman proposed reviving a hermetic alternative.

Contemplating a Renaissance hermetic that integrated Eastern philosophy, traditional Western scholasticism and pagan knowledge, Berman comes to the surprising conclusion that it was not simply that hermeticists "conceived of matter as possessing mind in those days, but rather that in those days, matter *did* possess mind, actually did so".[87] Both Berman and Yates describe the mind-body dualism of Descartes as an over-reaction to this animism of the then prevalent hermetic atmosphere, with Yates adding that this methodological mistake allowed "the problem of mind to fall so completely out of step and so far behind the problem of matter in the external world and how it works".[88] The result of this methodological mismatch is today revealed in the cultural and ecological disruptions which emanate from the West's uncertain division of nature and humanity. Based upon such an understanding, Berman states that effectively responding to today's environmental crisis will require reviving a hermetic "participatory consciousness", but in such a way that "is scientifically credible and not merely a relapse into naïve animism".[89] He concludes that healing the West's environmental crisis by

defending the planet "against the continuing momentum of industrial socialism and capitalism, may thus be the ultimate safety valve in the emergence of a new consciousness".[90] The purpose of my act of hermetic contemplation is to historically animate climatic thinking about the West's uncertain participation in today's local and global changes, and from that pre-Enlightenment view begin to animate an interdisciplinary response.

Responding to the limitations of objectively researching the environmental crisis, Evernden finds it necessary to move beyond thinking "in terms of problems and solutions" so that any dilemma is seen as a "manifestation of an entire social context".[91] Following a similar line of environmental studies, Peter Timmerman explains that the complex relations that couple global environmental issues to human actions provide a space to contemplate them as mysteries.[92] In contrast to that disciplinary objectivity that views nature as an external problem in need of solving, he follows the theology of Gabriel Marcel to reveal the mysterious nature of environmental issues. While Marcel states that a "mystery is a problem that encroaches upon its own data, that invades the data and thereby transcends itself as a simple problem",[93] Timmerman views this same dynamic as interconnecting humans to environmental issues. He concludes that while problems can be solved in isolation, the more you try to "solve a mystery, the more it pulls you in".[94] In other words, the interaction of human GHG emissions and the climate system can be conceived as pulling Western research and political economics into more animated social relations with other cultures and the interconnected atmospheric, terrestrial, oceanic and biological systems.

As an alternative to that disciplinary objectivity which isolates the West from the problems of the environment and other cultures, Evernden is influenced by the phenomenological method to consider the social context as "fields of care" that symbiotically sustain "being-in-the-world".[95] Livingston extends Evernden's "fields of care" by suggesting it is possible for humans and other beings to transcend the individual by connecting with a group, community and biospheric consciousness.[96] He states that for healthy ecological

functioning it may be that "everyday consciousness" needs to be only secondarily focused upon the individual self, and primarily engaged with a "transcendent and participatory" consciousness that resonates with these hermetic critiques.[97] In his environmental thinking, individuals experience other beings "of their own and of neighboring species not as others but as simultaneous co-existences or co-expressions of that place, perhaps as extensions of themselves".[98] Beyond a species group and ecological community consciousness, the most inclusive environmental thinking is defined by Livingston as awakening to a "biospheric self" that is the "consciousness of entire populations and communities" which builds at critical times and recedes "when recourse to other forms of self is more appropriate".[99] These scales of consciousness that parallel Berman's hermetic thought that "matter did possess mind" offers me a way of deepening climatic thinking through contemplating the climate's multi-dimensional thoughts that mysteriously animate the cosmos.

Being a conservationist whose thought is informed by ecological science, it should not be surprising that Livingston's fields of consciousness in some ways mirror the nested hierarchy theory of community ecology. This science conceives ecologies as a hierarchy of scales that are defined by temporal and spatial dynamics. As a general rule of thumb, the larger scales are patterns that move over longer timeframes and broader geographies which constrain and provide opportunity for smaller scales that consist of shorter timeframes and more localized spaces. Climate change's many interacting processes can be seen as nested hierarchies. At the higher ends of this hierarchy are the Sun and biospheric orbital cycles that globally influence the climate as they cycle over periods of thousands of years. Below these are the interacting movements of land masses, oceans, glaciers, GHGs, forests, bioregions, weather patterns, human cultures, animal and plant species, individual beings and so much more. Each of this act's chapters, coupled with three in the IQ dialogues, contemplates the history and pre-history of one ecological process in this climatic hierarchy that blends ecological processes with the hermetic spirit of Livingston's fields of consciousness.

While paleoclimate research of pre-historical movements provides the content for engaging specific scales of this climatic hierarchy, each of the act's chapters are grounded within significant periods of climatic change that regionally impacted Western cultural understandings. These contemplative chapters start with the *Medieval Warming Period* which begins at around 600 C.E., and looks at its impact on those North Atlantic Isles which manifest this act's first steps from Celtic Christian thought to hermeticism. As a means for addressing Berman's point that it is "nearly impossible" to engage a pre-modern consciousness,[100] I shift the approach from critically analyzing hermetic texts from each ensuing time period for alternatives – as in Berman, Merchant and Yates – to that of reading primary texts for hermetic instruction in the methodological contemplation of the animated relation between Western culture and the climatic hierarchy. The second chapter continues by contemplating some primary texts of a French tradition that was partially inspired by Celtic Christianity as the medieval warming gave way to a *Little Ice Age* that slowly began in the fourteenth century. These first two chapters have the feel of an exegesis that is occurring within the midst of a shifting climatic hierarchy, but as the hermetic tradition approaches the Enlightenment and Industrial Revolution the exegesis shifts into a practice that is increasingly embedded in the interdisciplinary knowledge of the West's climatic uncertainty. In fact, my last two chapters contemplates a Canadian bridge that can bring these hermetic contemplations of the climatic hierarchy over the Enlightenment and the West's emerging industrial warming into a sharing with the acts of climatic thinking and IQ dialogues. The concluding chapter is not simply a romantic revival of a Renaissance tradition, but rather my Canadian elucidation of a twenty-first century hermetic methodology that is transformed by interdisciplinary, intercultural and ancestral knowledge sharing.

Polyphonic Conclusion

The uncertain complexity of climate change guides Weart to the suggestion that it is not a phenomenon which can be understood through "one story", but must be recognized as "many parallel stories, only sporadically connected".[101] Resonating with this scientific view is the poignant storytelling advice of an elder Tikigaq Inuit from northwest Alaska: "Never tell one story. Always add a second. That way, the first one won't fall over".[102] Drawing from other Native oral traditions of North America and Western Europe, Sean Kane states that these storytellers knew "that truth cannot be captured in a solitary idea", for it "tumbles about in the polyphonic stories told by the animals and birds and mountains and rivers and trees - not in some taxonomy of their separate identities but in the play of exchanges among them, which is the only way we really know nature".[103] To think about the climatic hierarchy is, as Kane advises, to recognize that stories have multiple levels which value science and economic ingenuity, but views "causal reasoning on its own... as flatland thinking, a failure to think on more than one level simultaneously".[104] In exchange for a monolithic story, oral mythologies are "wild, ecstatic and musical, expressing the shapes and flows of forest, sea and the sky".[105] This organic storytelling that parallels those critiques which guide my research into acts of climatic thinking, IQ dialogues and hermetic contemplations also challenges me to be polyphonic in the storied representation of these twelve chapters on the West's climatic uncertainty.

The term polyphony derives from Western Europe's medieval period, referring to music that was sung with others in diverging parts rather than in unison. In 1997, Robert Bringhurst contemplated the literary value of polyphony in the context of its introduction to Canadian scholarship by the poet Dennis Lee in the 1970s. While Lee describes polyphony as an "art of orchestrating more than one voice across a work",[106] Bringhurst follows his lead to consider "why a multiplicity of voices mattered in the first place". Resonating with the climatic hierarchy's diverse temporal and spatial voices, Bringhurst explains that polyphony uses the

given time of a piece to create space through a "dance of insistent and persistent multiplicities".[107] These multiple voices are coequals rather than a hierarchy of "musical servant and lord", with the coequality giving the polyphonic work a capacity to "exceed the sum of the parts".[108] Kane enters this dialogue by stating that polyphony dethrones the power of any "transcendent authority" through the sound of the many which "occupy the same time and space without dissolving into sameness yet without segregating into opposing difference".[109] He adds the important methodological caveat that even the most conscious of poets cannot write polyphony merely through representing "multiple voices", for that act is merely participating in the creation of "polyphonic effect".[110] This distinction is important to Kane because it reminds "poets of their distance and proximity to the Real, if only to keep them playful".[111] His clarification of "polyphonic effect" guides my representation of these three acts in contextualizing Western research and culture within stories of the climatic hierarchy's "dance of insistent and persistent multiplicities".

To create such a contextualizing polyphonic effect, I have methodologically written in a way that allows the reader to choose any one of the three acts as their point of entry into considering a response to the West's climatic uncertainty. For those interested in beginning with a critical interdisciplinary analysis, the first act is your place of departure for eventually entering into IQ dialogues and then hermetic contemplations. While a more detailed map of this act's chapters can be seen in Table I (see end of Introduction), the dominant theme across its four storylines is how the power of Western culture is creating climatic uncertainties that require a response which can more effectively open out to other cultural, historical and natural voices. This act's way of reading is for those who feel more comfortable starting in a Western sphere of thought and then using critical analysis of problematic cultural limits as an impetus for engaging Inuit and hermetic realities (see Act I Guide in Table I).

The second approach starts with an Inuit reading of the West's climatic uncertainty, and as such requires a slight re-arrangement of the first two acts so that you begin with IQ

dialogues and move through climatic thinking before also ending with hermetic contemplations (see Act II Guide in Table I). While my Western mediation of all the dialogues in this reading means it could never truly represent an IQ-based understanding of climate change, these stories still offer a clear contextualization of Western power within an intercultural frame of reference. In this meager way this approach provides a different sense of climate change than that achieved when beginning with the first act's largely Western discourse.

The hermetic reading requires a more detailed explanation as it is concerned with the polyphonic coherence that came by way of my methodological approach of this research. Though this introduction presents the three acts as a linear unfolding from the first through third, the methodological reality is that aspects of all three co-existed throughout the research. As my critique of the viability of post-Enlightenment Western thought and actions on climate change increased, I also engaged very different IQ and hermetic understandings. In time it became clear that while I could appreciate IQ in dialogue, it was a knowledge based in northern ecological and cultural dimensions that would forever exceed the critical comprehension of an environmental studies researcher positioned in the Canadian urban center of Toronto. In contrast, the hermetic contemplations were intimately connected to Western symbols, histories and ecologies that opened me up to an alternative view of climate change that was more culturally and ecologically accessible to my critical position. Since these hermetic contemplations cycled through the background of the other two acts, its representation asks the reader to wind their way through the chapters. It is a way of reading for those who, like myself, have a spiritual inclination and want to begin by contemplating the animate nature of the climatic hierarchy before laterally shifting to IQ dialogues and climatic thinking. This hermetic path is signified by the four trilogy themes of wisdom, apocalypse, response and sharing that mark the lateral path which cuts across the twelve stories of the three acts to eventually interweave them in a polyphonic conclusion (see Act III Guide in Table I).

With each chapter written in a way that does not presume one reading trajectory, I attempt to create a polyphonic effect that confronts the pre-dominance of Western thought and political economic actions related to climate change. The interaction of these three diverse reading approaches allows the stories of the first act to build linearly off of each other. At the same time, their interdisciplinary analyses cannot rely upon the storylines of the other acts, even though connections will be obvious to those who take either the IQ or hermetic approach. Meanwhile, the three different approaches to the IQ dialogue chapters interact in such a way that for each story there is at least one group of readers in the dark. This means that beyond this introduction there are no common chapters being carried forward into these stories, they must stand alone while also interacting as a whole. Finally, the hermetic contemplations of the third act have a certain feeling of cyclical accretion due to the three reading approaches. The first chapter stands alone; the following two chapters include references to the previous chapter of this act plus two chapters from each of the other acts which all approaches will have read; and the final chapter hermetically interconnects interdisciplinary and intercultural understandings of this climatic hierarchy to a Canadian polyphonic effect that contextualizes my research in the West's global uncertainty.

There is one final methodological point that needs to be addressed before choosing your first reading act. As is now clear, the hermetic act is a central feature of my overall approach to both climatic thinking and IQ dialogues. It is important to foreground this bias before engaging the following polyphonic effect, for it clarifies that my research methodology ultimately distanced me from an objective sense of the West's climatic uncertainty. But in a world where the climatic hierarchy is the responsive context of all research, what appears like methodological failure is actually the pervasive human challenge to understand and respond to changes which are related to our individual, national and cultural actions. This is the nature of the West's climatic uncertainty. As such, the thought and methodology of all climate research is inevitably caught in the unknowable nature of complex social relations that are today

disrupting Western and Inuit cultures. One hermetic ancestor, to be met in the third act's first chapter, transformed my perspective on this methodological uncertainty by inspiring a *climate of unknowing* which portends the spirit of these twelve stories:

> Do not suppose, because I call it a dark climate that it is extreme weather which is condensed out of the vapours that float in the air, or a darkness like that in your house at night when the power is out. For when I say climatic darkness I mean an absence of knowing, in the sense that everything you do not know, or have forgotten, is dark to you, because you cannot see it solely with your Western climatic thinking. And for this reason it is not simply called a climate of the atmosphere, but a climate of unknowing that is put between your thought and the Unknowable source of the climatic hierarchy.[112]

Table I: Three Acts Approaching Polyphonic Effect

ACT I Climatic Thinking	ACT II IQ Dialogues	ACT III Hermetic Contemplations	
1) Uncertain Climate for Scientific Wisdom *Subject*: The evolution of science towards climate change from Enlightenment to IPCC and beyond.	**8) The Weather Wisdom of Sila** *Climatic Hierarchy*: Air *Subject*: Follows climate scientists, anthropologists, and Inuit into the shamanic wisdom of Sila's weather changes.	**9) Iona's Sea-Road to North Atlantic Wisdom** *Climatic Hierarchy*: Ocean *Time Period*: 600-1400 C.E. *Subject*: Hermeticism enters the West through the Atlantic Ocean relations of Celtic Christians during the medieval warming.	Trilogy I: ***Wisdom***
2) Fuelling America's Climatic Apocalypse *Subject*: The interacting effects of Christian fundamentalism and fossil fuel interests on the future of the United States.	**7) Warming up to an IQ-Christian Apocalypse** *Climatic Hierarchy*: Glaciers *Subject*: Colonial impacts on Chesterfield Inlet, and an evolving IQ-Christian view of Arctic glacial changes as apocalypse.	**10) Notre-Dame de Gaia's Apocalyptic Translatio** *Climatic Hierarchy*: Forests, CO_2 *Time Period*: 1100-1700 C.E. *Subject*: With the Little Ice Age (LIA), a Celtic inspired hermetic spirit walks through French forests which are symbolically integral to this cooling.	Trilogy II: ***Apocalypse***
3) Canada's Failed Liberal Response to Kyoto *Subject*: An assessment of Canada's 12 year Liberal economic response to the Kyoto Protocol that contrasts United States Republicanism.	**6) Hunting Sedna's Climatic Animal Response** *Climatic Hierarchy*: Animals *Subject*: Inuit stories about Sedna, Mother of the Animals, is the context for bringing scientific knowledge of northern animal changes together with IQ.	**11) Glacial Response of a Canadien Enlightenmêtis** *Climatic Hierarchy*: Glaciers *Time Period*: 1500-1900 C.E. *Subject*: French colonial relations in Native Canada offer a story for imagining a hermetic path from the LIA's glacial expansion to today's industrial melting.	Trilogy III: ***Response***
4) Canada's Sharing in a Western Original Scarcity *Subject*: A case study in Canada's Conservative climate policy shift, and uncovering that which grounds each of this act's chapters in a common Western tradition.	**5) Inuit Qaujimajatuqangit's Traditional Sharing Way** *Subject*: An IQ cosmological view and social response that offers an alternative to the West's structuring of society around market economic rationality.	**12) Sharing Toronto's Passage to a Climate of Unknowing** *Climatic Hierarchy*: Urban CO_2 *Time Period*: Present *Subject*: The Toronto heat island is the basis for hermetically intertwining the polyphonic voices of these three acts in a climate of unknowing.	Trilogy IV: ***Sharing***
ACT I GUIDE 1 8 > 9 v ^ v 2 7 10 v ^ v 3 6 11 v ^ v 4 > 5 12	ACT II GUIDE 5 4 > 9 v ^ v 6 3 10 v ^ v 7 2 11 v ^ v 8 > 1 12	ACT III GUIDE 1 < 8 < 9 v 2 > 7 > 10 v 3 < 6 < 11 v 4 > 5 > 12	

ᓴᖅᑭᑎᑦᑎᓂᖅ ᐱᓇᓱᐊᕐᓂᕐᓂᒃ ᓯᓚᐅᑉ ᖃᐅᔨᒪᓇᓐᖏᓐᓂᖓᓂᒃ
Introducing Acts to a Climate of Unknowing

ᐱᓕᕆᓂᕋ ᐱᔾᔪᑎᖃᖅᑐᖅ ᐃᓄᐃᑦ ᐊᑦᑐᐊᔪᐅᓂᖓᑦ ᓯᓚᕐᔪᐊᕐᒥ ᐊᒻᒪ ᐅᑭᐅᖅᑕᖅᑐᒥ ᓯᓚᐅᑉ ᐊᓯᕈᕐᓂᖓᓄᑦ ᐱᑕᖃᕈᓐᓇᖅᑎᑕᐅᓯᒪᔪᖅ ᐊᒥᓱᒐᓚᓐᓄᑦ ᐃᓄᓐᓄᑦ ᓂᓪᓕᐅᑎᒥᔪᒪᔭᓐᓄᑦ ᓯᕗᓂᖓᓂᖓ ᑖᒃᓯᒪ ᐱᒋᐊᙵᐅᑎᐅᑉ. ᐊᓂᒍᖅᑎᓪᓗᒍ 2003 ᐅᐸᖅᓯᒪᓚᐅᖅᓯᒪᔪᖓ ᐃᓕᓐᓂᐊᖅᑎᑦᑎᓗᓂ ᐅᓂᒃᑳᕐᓂᖓᓄᑦ ᔭᐃᐱᑎ ᐊᕐᓇᒃᑲᐅᑉ ᒥᒃᓵᓄᑦ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑕ ᔪᐊᒃ ᐃᓕᓐᓂᐊᕕᔾᔪᐊᕐᒥ. ᑐᓴᖅᓴᐅᑎᑕᐅᓚᐅᖅᓯᒪᔪᖅ ᐃᓅᓪᓗᓂ ᐊᑐᐊᒐᕐᓂᒃ ᖃᐅᔨᒋᐊᖅᑎᐅᓂᖃᖅᑕᐅᓪᓗᓂ ᐃᖅᑲᓗᓐᓂᑦ, ᓄᓇᕗᒥᑦ ᐅᖃᓪᓗᓇᑦᑑᓪᓗᓂ ᐅᖃᖅᑎᒥᔭᖅ ᐊᑦᑐᐊᓂᖏᓐᓄᑦ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ, ᐊᕙᑎᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ, ᐊᒻᒪ ᓱᖏᐅᑎᕙᓪᓕᐊᓂᖓᑕ ᐃᓄᐃᑦ ᐃᓅᓯᖓᑦᑕ ᒫᓐᓇᐅᓕᖅᑐᖅ ᓯᓚᕐᔪᐊᕐᒧᑦ. ᖃᑦᑏᓐᓇᕈᓗᓐᓂ ᑕᖅᑭᓂ ᐃᓕᓐᓂᐊᖅᑎᑦᑎᓗᓂ ᐅᓂᒃᑳᕐᓂᖅᑕᖃᓚᐅᖅᑎᓪᓗᒍ ᖃᕋᓴᐅᔭᒃᑯᑦ ᑎᑎᕋᖃᑦᑕᐅᑎᓂᒃᑯᑦ ᐅᖃᖃᑎᒌᓐᓂᖃᑕᓚᐅᖅᓯᒪᕗᒍᑦ ᐃᓱᒻᒫᓚᒍᑎᒥᑐᐃᓐᓇᓚᐅᖅᓯᒪᓐᖏᑕᓐᓂᒃ ᐃᓱᒪᖃᖅᓯᒪᓂᓐᓄᑦ ᒥᒃᓵᓄᑦ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑎᒍᑦ ᐃᓱᒪᒋᔭ ᖃᕈᓯᕐᒥᒃ ᐱᓪᓗᒍ ᓯᓚᐅᑉ ᐊᓯᕈᕐᓂᖓ, ᑭᓯᐊᓂᑦᑕᐅᖅ ᖃᓄᓕᒫᑦᑎᐊᖅ ᐊᓯᕉᑕᐅᓕᓚᐅᖅᓯᒪᔪᑦ ᐃᓚᖏᓐᓄᑦ ᐱᖓᓐᓇᕐᒥᐅᑐᑦ ᐅᑉᐱᓇᔭᖃᕈᓯᓇᒥᐊᙵᖅᓯᒪᔭᓐᓄᑦ ᒥᒃᓵᓄᑦ ᐊᕙᑎᖓᑕ ᓯᓚᕐᔪᐊᑉ. ᑕᐃᕙᐅᑎᓐᓇᒥᑦ ᔭᐃᐱᑎᐅᑉ ᐅᖃᐅᓯᖕᒥᑦ ᑕᒪᓐᓇ ᐱᓕᕆᐊᖅ ᓱᒪᑦᑐᐊᕋᔭᓐᖏᑦᑐᖅ. ᐊᑐᐊᖅᓯᔾᔪᑎᖃᖅᑎᑦᑎᓂᖓᑦᑕᐅᖅ ᐱᑕᖃᖅᑎᑦᑎᔪᓐᓇᕈᑎᒥᓚᐅᖅᓯᒪᕙᕋ ᒪᕐᕉᓐᓄᑦ ᐅᓪᓘᓐᓄᑦ ᓯᓚᐅᑉ ᐊᓯᕈᕐᓂᖓᓂᒃ ᐃᓕᓐᓂᐊᕋᐅᔭᕐᓂᕐᒥᒃ ᐃᒡᓗᓕᒑᕐᔪᖕᒥ, ᓄᓇᕗᒥ. ᓯᒥᐅᓂ ᓴᒻᒧᖅᑐᖅ, ᐊᖏᔪᖅᑳᖓᑦ ᓄᓇᓕᓐᓂ ᐊᖑᓇᓱᒃᑎᑦ ᐊᒻᒪ ᒥᑭᒥᐊᕐᓂᐊᖅᑎᑦ ᑎᒥᖓᑦᑕ, ᐃᓕᓐᓂᐊᕋᐅᔭᕐᓂᕐᒥᒃ ᐱᔭᒃᓴᐅᑎᑦᑎᕐᐅᖃᑕᐅᓕᓚᐅᖅᐳᖅ ᐊᒻᒪ ᑐᑭᓕᐅᕆᐅᖅᑐᓐᓂ, ᐊᒻᒪ ᐱᖅᑕᐅᔪᓄᑦ ᐃᓚᒥᔭᐅᓪᓗᑎᒃ ᐅᑯᐊ ᐋᓐᑐᕋᐃ ᑕᐅᑐ, ᐃᓚᐃ ᑭᒻᒪᓕᐊᕐᔪᒃ, ᓗᐃ ᐊᐅᑐᑦ, ᑳᓴᒥᐅ ᕿᑎᕐᕼᐅᒃ, ᐃᓕᓴᐱ ᑕᐅᑐ, ᐹᓂ ᐸᑐᓕᒃ, ᐊᒻᒪ ᒫᒃ ᐊᒪᕈᖅ. ᓯᓚᒥᒃ ᐅᔾᔨᓱᕐᓂᖕᒥᑦ ᑖᒃᑯᐊ ᐃᓄᐃᑦ ᓇᐃᑦᑐᒥ ᑲᑎᒪᓂᑦᑎᓐᓂ

ᐱᒻᒪᕆᑲᓚᐅᓂᖃᓚᐅᖅᐳᑦ ᐋᖅᑭᓱᔾᔪᑎᒋᓪᓗᒋᑦ ᑕᒪᐃᓐᓂᒃ ᐃᓄᓐᓂᑦ ᐱᒋᐊᖅᓯᒪᔪᓂᒃ ᓵᑦᑕᓂᒃ. ᖁᔭᓕᔾᔪᑎᒋᓪᓗᒍ ᑕᐃᒃᑯᓂᖕᒐ ᐃᓄᓐᓂᒃ ᐊᒻᒪ ᑭᖕᒍᐋᖅᓯᐅᕐᓂᒃᑯᑦ ᖃᐅᔨᒪᓂᖕᒋᓐᓂᒃ ᐃᓄᐃᑦ ᐃᓕᖅᑯᓯᕐᒥᒍᑦ, ᐊᑐᐃᓐᓇᐅᑎᑦᑎᕗᖕᒐ ᐆᒥᖕᒐ ᓇᐃᑦᑐᒥᒃ ᐃᓄᒃᑎᑐᑦ ᑐᑭᓕᐅᖅᓯᒪᔪᒥᒃ ᐱᒋᐊᓐᖕᒐᐅᑎᒥᒃ, ᓵᑦᑕᓂᒃ ᐅᓂᒃᑳᓕᐅᕈᑎᓂᒃ ᐃᓚᓕᐅᑎᓯᒪᔪᒥ ᓇᓗᓇᐃᖅᓯᔾᔪᒥ 1-ᒥ ᐊᒻᒪ ᖃᑦᑏᓐᓇᕈᓗᓐᓂ ᑐᑭᓕᐅᖅᓯᒪᔪᓂ ᐅᖃᐅᓯᕆᔭᐅᓯᒪᔪᓂ ᓯᕗᓂᖕᒋᓐᓂ ᐊᑐᓂᑦ ᓵᑦᑕᐃᑦ..

ᐅᓚᕕᓴᐃᓂᖃᖅᑐᖅ ᓇᓗᓇᕈᑕᐅᔪᖅ ᐱᓪᓗᒋᑦ ᐅᓪᓗᒥ ᓯᓚᒍᑦ ᐊᓯᕉᑕᐅᔪᑦ ᓵᖕᒐᓐᓂᖅᐳᑦ ᐱᖕᒐᓐᓇᕐᒥᐅᑦ ᐊᑕᐅᓯᐅᓐᖕᒋᑦᑐᒥᒃ ᐱᓕᕆᔾᔪᑎᖃᕐᓗᓂ ᓱᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕈᓯᖕᒐᓐᓂᒃ ᖃᐅᔨᒪᓕᖅᐸᓪᓕᕈᑕᐅᓯᒪᒪᒐᓗᐊᖅᓱᑎᒃ ᑭᓯᐊᓂ ᐃᓚᓐᖕᒐᐹᓪᓕᕈᑕᐅᓯᒪᓪᓗᐊᕐᑎᒃ ᓇᓗᓇᕈᑕᐅᔪᓄᑦ. ᐅᖕᒐᑖᓂ 80 ᐳᓴᖕᒋᑕ ᓴᓇᕕᒃᓴᖃᕕᔾᔪᐊᓕᖅᑎᓪᓗᒍ ᐅᖅᑰᓯᐸᓪᓕᓇᖅᑐᑦ ᐳᔪᕐᓗᐃᑦ ᐱᒋᐊᖅᐸᑎᓪᓗᒋᑦ ᐱᖕᒐᓐᓇᕐᒥᐅᑦ ᓄᓇᓕᕐᔪᐊᖕᒋᓐᓂ, ᑕᒪᕐᒥᑲᓴᒃ ᑕᒪᓐᓇ ᓱᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕐᓂᒃᑯᑦ ᓇᓗᓇᕈᑕᐅᔪᖅ ᐃᓚᓕᐅᖅᓯᒪᕗᖅ ᒐᕙᒪᓕᕆᓂᒃᑯᑦ ᑮᓇᐅᔭᓕᐅᕈᑎᓄᑦ, ᐅᑉᐱᕆᔭ ᖃᕐᓂᕆᔭᓄᑦ ᐊᒻᒪ ᐱᔾᔪᓯᔭᓄᑦ ᑖᒃᓱᒪᓂ ᐃᓕᖅᑯᓯᕐᒥ. ᓯᓚᕐᔪᐊᕐᒥ ᐊᖕᒋᑎᒋᓂᖕᒐ ᐱᖕᒐᓐᓇᕐᒥᐅᑦ ᓇᓗᓇᖅᑐᒃᑯᑦ ᐊᑦᑐᖅᓯᓂᖕᒐᑦ ᓯᓚᒥᒃ ᑐᑭᖃᕆᕗᖅᑕᐅᖅ ᐊᓯᖕᒋᑦ ᐃᓕᖅᑯᓯᕐᒥᒃ ᖃᐅᔨᒪᔭᖃᕈᓰᑦ ᐅᓚᕕᓴᖅᑕᐅᓕᕐᓂᖕᒋᓐᓂᒃ, ᑕᒪᒃᑯᐊᓗ ᐃᓄᐃᑦ ᖃᐅᔨᓕᖅᑐᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᕙᑎᒥ ᐆᒪᔪᓄᑦ ᐱᕈᖅᑐᓄᓪᓗ ᓄᖅᑭᐅᕐᕕᖕᒋᑦ, ᖃᐅᔨᒪᓂᖕᒋᓪᓗ ᐊᒻᒪ ᐃᓅᓯᖕᒋᑦ ᐊᑦᑐᖅᑕᐅᓂᖕᒋᓐᓂᒃ ᐅᖕᒐᓯᑦᑐᒥᑦ ᐱᖕᒐᓐᓇᕐᒥᐅᑦ ᐱᓕᕆᓂᑯᖕᒋᓐᓄᑦ. ᐱᒻᒪᕆᐅᓂᖕᒋᑦ ᑕᒪᒃᑯᐊ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᓯᕉᑕᐅᔪᑦ ᑐᑭᓯᐅᒪᓂᒃᑯᑦ ᓯᓚᕐᔪᐊᒥ ᓯᓚᒥᒃ ᐊᖅᑯᑎᑭᔭᐅᓯᒪᕗᑦ ᓱᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᖅᑎᓄᑦ ᐅᖅᑲᑎᒌᒍᑎᖃᓂᕐᒍᑦ ᐃᓄᐃᑦ ᐃᓕᖅᑯᓯᕐᒥᒃ ᓯᓚᑎᒥᓪᓗ ᖃᐅᔨᒪᓂᖕᒐᓐᓂᒃ ᐱᕈᔪᓐᖕᒋᓐᓂᖕᒋᒃ ᑕᒪᒃᑭᒃ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖕᒋᑕ ᐊᒻᒪ ᓱᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕐᓂᐅᑉ ᐃᓱᒻᒫᓚᒍᑕᐅᓕᖅᑎᓪᓗᒋᒃ. ᓯᓚᐅᑉ ᐊᓯᕈᕐᓂᖕᒐ ᑲᔪᓯᐹᓪᓕᕈᑕᐅᕗᖅ ᐱᖕᒐᓐᓇᕐᒥᐅᑦ ᐊᑕᐅᓯᐅᓐᖕᒋᑦᑐᒥᒃ ᐱᓕᕆᔾᔪᑎᖃᕐᓗᓂ ᓱᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕈᓯᖕᒐᑦ ᐃᓕᖅᑯᓯᐅᖅᑲᑎᒌᑦ ᑐᓴᐅᒪᖃᑦᑕᐅᑎᓂᖕᒋᓐᓄᑦ ᐃᓅᓯᒃᑯᑦ ᐊᖅᑯᑎᒋᔭᐅᓪᓗᑎᒃ ᑐᑭᓯᐅᒪᓂᕐᒍᑦ ᑕᒪᒃᑯᓂᖕᒐ ᓇᓗᓇᕈᑕᐅᔪᓂᒃ. ᑕᐃᒪᓕ ᒐᕙᒪᐅᖅᑲᑎᒌᑦ ᖃᐅᔨᓴᖅᑎᖕᒋᑦᑕ ᐱᓪᓗᒍ ᓯᓚᐅᑉ ᐊᓯᕈᕐᓂᖕᒐ ᐊᑕᐅᓯᐅᓐᖕᒋᑦᑐᒥᒃ ᐃᓕᓐᓂᐊᖅᓯᒪᔾᔪᓯᕐᒥᒃ ᐊᑐᕐᓂᖕᒐᑦ ᐊᒻᒪ ᑭᐅᑐ ᐱᓕᕆᔾᔪᑕᐅᒋᐊᓐᖕᒐᖅᑐᖅ ᑎᑎᖅᑲᐅᑉ ᓯᓚᕐᔪᐊᓚᒫᕐᒍᑦ ᐃᓕᖕᒐᓂᖕᒋᒃ ᓇᓗᓇᐃᒃᑯᑕᐅᒪᓗᐊᖅᑎᓪᓗᒋᒃ ᐱᕙᓪᓕᐊᓂᕐᒍᑦ ᐃᓅᓯᒃᑯᑦ ᐱᓕᕆᕙᓪᓕᐊᓂᕐᒍᑦ, ᑭᓪᓗᖅᑲᕈᑕᐅᕗᑦ ᐃᓕᖅᑯᓯᐅᖅᑲᑎᒌᑦ ᓂᓪᓕᐅᑎᖃᖅᓯᒪᓂᖕᒋᓐᓄᑦ ᑐᓴᖅᓴᐅᓯᒪᔪᓄᑦ ᑲᔪᓯᕙᓪᓕᐊᓂᖕᒐᓄᑦ ᐱᖕᒐᓐᓇᕐᒥᐅᑦ ᐃᓱᒪᒋᔭ ᖃᕈᓯᖕᒋᑕ ᐃᓚᓕᐅᑎᓯᒪᔪᓂᒃ ᑕᒪᒃᑯᓄᖕᒐ ᓯᓚᒍᑦ ᐊᓯᕉᑕᐅᔪᓄᑦ. ᒪᓕᒃᑐᒋᑦ ᐊᑦᑐᖅᓯᓂᖕᒋᑦ ᐊᑕᐅᓯᐅᓐᖕᒋᑦᑐᒥᒃ ᐃᓕᓐᓂᐊᖅᓯᒪᔾᔪᓯᕐᒥᒃ ᐊᑐᕐᓂᐅᑉ ᐃᓕᖅᑯᓯᐅᖅᑲᑎᒌᑦ ᑐᓴᐅᒪᖃᑎᖃᕐᓂᕐᒍᑦ ᐃᓄᓐᓂᒃ ᐊᒻᒪ ᑕᐅᖅᓯᐅᑎᔪᓐᓇᖅᑐᒍᑦ ᐱᖕᒐᓐᓇᕐᒥᐅᑦ ᐃᓱᒪᒋᔭᖅᑲᖕᒋᓐᓄᑦ ᑕᐃᒪᓐᖕᒪᕐᒍᖅᑲᓂᑦ ᓯᓚᐅᑉ ᐊᓯᕈᕐᐸᓪᓕᐊᓂᖕᒐᑦ, ᖃᐅᔨᓴᕐᓂᕋ ᐱᓇᓱᐊᕈᑎᒋᔪᒪᕙᕋ ᐃᓚᐅᓇᕐᓂᖅᓴᒥᒃ ᐊᒥᖅᑲᕈᓯᒋᒃ ᑲᒪᒋᔭᖅᑲᕈᑕᐅᔪᓐᓇᖅᑐᒥᒃ ᑭᓪᓕᖅᑲᖅᑎᑦᑎᓂᒋᒃ ᐃᓕᖅᑯᓯᒃᑯᑦ ᐃᓱᒪᒋᔭᐅᓯᒪᔪᓂᒃ ᐃᓱᒪᒋᔭᐅᑎᓪᓗᒋᑦ ᓯᕗᓂᒥ ᐊᕕᑦᑐᖅᓯᒪᔪᓂ ᐊᒻᒪ ᓯᓚᕐᔪᐊᒥ ᑲᒪᒋᔭᖅᑲᕆᓱᐊᕐᓂᑦ.

ᑖᒃᓯᒪᓂ ᐅᖃᓕᒫᒐᕐᒥ ᐱᖓᓱᑦ ᐱᓕᕆᔾᔪᓯᖃᕐᓂᒃᑯᑦ ᐱᓇᓱᐊᕐᓂᑦ ᐊᑕᐅᓯᐅᙱᑦᑐᒥᒃ ᐱᓕᕆᔾᔪᑎᖃᕐᓗᓂ ᖃᐅᔨᓴᕐᓂᕐᒥᒃ, ᐃᓄᐃᑦ ᐅᖃᖃᑎᒌᓐᓂᖏᑦ ᐊᒻᒪ ᑕᐃᒪᙵᑐᖃᓂᑦ ᐃᓱᒪᑖᖅᐸᓪᓕᐊᓂᑦ ᑐᑭᓯᓇᓱᐊᕈᓯᐅᕗᑦ ᓯᓚᕐᔪᐊᕐᒥ ᐊᒻᒪ ᐊᕕᑦᑐᖅᓯᒪᔪᓂ ᖃᓄᐃᑦᑑᓂᖓᓂᒃ ᓯᓚᐅᑉ ᐊᓯᐅᕐᓂᖓᑕ, ᐊᒻᒪ ᓱᓇᑐᐃᑦ ᑲᒪᒋᔭ ᖃᕋᓱᐊᕐᓂᐅᒻᒪᙱᑦᑕ. ᑕᐃᒪᓕ ᐊᑐᓂᑦ ᓵᑦᑕᐃᑦ ᐊᑕᐅᓯᐅᙱᑦᑐᒥᒃ ᐱᓕᕆᔾᔪᑎᖃᕐᓗᓂ ᐱᓇᓱᐊᕐᓂᕐᓂ ᑕᐃᒪᙵᑐᖃᖅᓯᐅᑎᓂᒃ ᖃᓄᐃᓕᖓᓕᖃᓕᖅᑎᑕᐅᓯᒪᒐᓗᐊᖅᑎᓪᓗᒋᑦ 1700-ᓂ ᖃᐅᔨᕚᓪᓕᖅᓯᒪᓂᕐᒍᑦ ᐊᒻᒪ 1800-ᓂ ᓴᓇᕕᖃᕕᒃᔪᐊᓇᐊᓕᕐᓂᕐᒍᑦ, ᐱᔾᔪᑎᒋᔭᖕᒐᑦ ᒪᓕᒃᓯᒪᕗᖅ ᖃᐅᔨᓴᕐᓂᖏᓐᓂᒃ ᑎᓴᒪᑦ ᐊᑑᑎᖃᑦᑕᐅᑎᓯᒪᔪᑦ ᐱᖓᓐᓇᕐᒥᐅᑦ ᐃᓱᒪᒋᔭᖃᕈᓯᖕᒋᑦ ᐱᓪᓗᒍ ᓯᓚᐅᑉ ᐊᓯᐅᕐᓂᖓ: ᐱᕙᓪᓕᐊᓂᖓ ᓯᓚᒥᒃ ᖃᐅᔨᓴᕐᓂᐅᑉ, ᒥᐊᓕᒐᐃᑦ ᓇᐸᑉᓕᑲᒥᐅᑕᐅᓂᕐᒥᒃ ᒐᕙᒪᖃᕈᓯᖕᒐᑦ, ᑭᐅᑐ ᐱᓕᕆᔾᔪᑕᐅᒋᐊᙵᖅᑐᖅ ᑎᑎᖅᑲᐅᑉ ᓯᖅᑯᓯᐅᑎᓂᖓ ᑲᓇᑕᐅᑉ ᐊᓂᒍᓕᖅᑎᓪᓗᒋᑦ 1900-ᖕᒋᑦ ᓕᐳᕈᒃᑯᑦ ᑲᒪᒋᔭᖃᕋᓱᐊᕐᓂᖓᑦ, ᐊᒻᒪ ᓯᓚᕐᔪᐊᑉ ᓴᐳᑎᔭᐅᔾᔪᑎᖓ ᐃᓕᖅᑯᓯᐅᖃᑎᒌᑦ ᐅᑉᐱᕐᓂᓕᕆᔨᒃᑯᑦ ᐱᓕᕆᔾᔪᓯᕆᔭᐅᓪᓗᓂ. ᑐᓪᓕᕐ ᐱᓕᕆᓂᕐ ᐱᖓᓐᓇᕐᒥᐅᑦ ᓱᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕈᓯᖕᒐᑦ ᐊᒻᒪ ᐊᑐᐊᒐᖕᒐᑦ ᐃᓚᓕᐅᑎᓯᒪᕗᑦ ᐃᓗᐊᓂ ᐊᒻᒪ ᑐᑭᓕᐅᖅᑕᐅᓯᒪᓪᓗᑎᒃ ᐅᖃᖃᑎᖃᕐᓂᒃᑯᑦ ᐃᓄᓐᓂᒃ ᐱᓪᓗᒋᑦ ᐃᓚᖏᑦ ᐃᓕᖕᒐᓂᖃᖅᑐᑦ ᐅᓂᒃᑳᑦ ᐊᒻᒪ ᐃᓄᒃᑎᑐᑦ ᑕᐃᒍᑏᑦ. ᐆᑦᑑᑎᒋᓗᒍ, ᓵᑦᑕ 6-ᒥ ᐅᓂᒃᑳᖑᓂᖓ ᓴᓐᓇᐅᑉ ᐊᑐᖅᑕᐅᕗᖅ ᑐᑭᓯᔾᔪᑕᐅᓇᓱᐊᖅᑐᓂ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐆᒪᔪᑦ ᐊᓯᐅᕐᓂᖏᑦ ᑎᑎᖅᑲᓕᐅᕆᑕᐅᕙᓪᓕᐊᔪᑦ ᓱᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕐᓂᒃᑯᑦ ᐊᒻᒪ ᐃᓄᓐᓄᑦ, ᑕᐃᒫᒃ ᐱᓇᓱᑦᑎᐊᕆᐊᖃᕐᓂᒃᑯᑦ ᑐᑭᓕᐅᖅᑕᐅᓪᓗᑎᒃ ᑕᒪᒃᑯᐊ ᐊᓯᕉᑕᐅᔪᑦ. ᑭᖑᓪᓕᖅᐹᒥ, ᓵᑦᑕᖏᑦ ᐱᖓᔪᐊᑕ ᐱᓇᓱᐊᕐᓂᐅᑉ ᑐᙵᕕᖃᖅᐳᑦ ᐱᒻᒪᕆᒐᓚᓐᓂᒃ ᑕᐃᒪᙵᑐᖃᓂᑦ ᓯᓚᐅᑉ ᐊᓯᐅᕐᓂᕆᖃᑦᑕᖅᓯᒪᔭᖕᒋᓐᓂᒃ - ᒥᑏᕗᒥ ᐅᖅᑰᓯᕙᓪᓕᐊᓂᐅᑲᐃᓐᓇᓚᐅᖅᓯᒪᔪᒥᒃ, ᓯᕐᒥᖃᓕᖅᐸᓪᓕᐊᓂᐅᑲᐃᓐᓇᓚᐅᖅᓯᒪᔪᒥᒃ, ᓴᓇᕕᖃᕕᒃᔪᐊᓕᖅᑎᓪᓗᒋᑦ ᐅᖅᑰᓯᕙᓪᓕᐊᓂᕐᒥᒃ ᐊᒻᒪ ᓯᕗᓂᕐᒥ ᓇᓚᐅᑦᑖᖅᑕᐅᔪᓂᒃ - ᐊᕕᑦᑐᖅᓯᒪᔫᒃᑯᑦ ᐊᑦᑐᖅᓯᓂᖃᖅᓯᒪᔪᓂᒃ ᐱᖓᓐᓇᕐᒥᐅᑦ ᐃᓕᖅᑯᓯᕐᒍᑦ ᐃᓅᓯᖕᒋᓐᓂᒃ ᐊᒻᒪ ᐃᓱᒪᔾᔪᓯᖕᒋᓐᓂᒃ. ᑐᓴᕐᓇᕐᓂᖕᒋᑦ ᑖᒃᑯᐊ ᐱᖓᓱᑦ ᐱᓇᓱᐊᕐᓂᑦ ᐃᓱᒪᑖᕐᓇᖅᐳᑦ ᐅᓪᓗᒥ ᓯᓚᒍᑦ ᐊᓯᕉᑕᐅᔪᑦ ᐃᓱᒻᒫᓚᓐᓇᕈᑕᐅᓗᐊᕆᐊᒃᓴᖕᒋᓐᓄᑦ ᐱᖓᓐᓇᕐᒥᐅᑦ ᐃᓕᖅᑯᓯᖓᓐᓄᑦ ᐋᖅᑭᒋᐊᖅᓯᔪᒃᓴᐅᓪᓗᑎᒃ ᑕᐃᒪᙵᑐᖃᓂᑦ ᐊᑯᓂ ᐅᑉᐱᕆᔭᖃᖅᓯᒪᓂᖕᒋᓐᓄᑦ, ᐱᔾᔪᓯᖕᒋᓐᓄᑦ ᐊᒻᒪ ᑲᒪᒋᔭᖃᕋᓱᐊᕐᓂᖕᒋᓐᓄᑦ ᐅᔾᔨᕈᓯᑦᑎᐊᓂᖅᓴᒃᑯᑦ ᐱᓕᕆᖃᑎᖃᓕᕐᓗᑎᒃ ᐊᓯᒥᓐᓂᒃ ᐃᓕᖅᑯᓯᕐᓂᒃ ᐊᒻᒪ ᓯᓚᐅᑉ ᐱᕙᓪᓕᐊᔾᔪᓯᖕᒋᓐᓂᒃ ᑐᑭᓯᒻᒪᓇᖅᑐᓂᒃ.

ᓇᓗᓇᐃᖅᓯᓴᐅᑦ 1: ᓴᓪᑕᓄᑦ ᐅᓂᒃᑲᓕᐅᑎᑦ

ᐱᓕᕆᓂᖅ 1 ᓯᓚᒧᑦ ᐃᓱᒪᓂᖅ	ᐱᓕᕆᓂᖅ 2 ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭ ᑐᖃᖏᑐᓄᑦ ᐅᖃᖃᑎᒋᑐᓂᑦ	ᐱᓕᕆᓂᖅ 3 ᐄᐅᒥᑎᒃᑎᑐᑦ ᐃᓱᒪᑕᖅᑭᓪᓕᐊᓂᑦ
1) ᓇᓗᓇᖅᑐᓂ ᓯᓚ ᓱᓇᐅᐃᖏᓇᓴᓂᒃ ᖃᐅᔨᓴᖅᓂᒃᓯᑦ ᓯᓚᑐᓂᒧᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐱᓕᕆᓪᓕᐊᓯᒪᓂᖅᓴ ᓱᓇᐃᐅᖏᓇᓴᓂᒃ ᖃᐅᔨᓴᖅᓂᒃᑯᑦ ᐱᔭᕇᑎᑎᕐᓗᒍ ᓯᓚᐅᑦ ᐊᓱᐃᓂᓴᖅᓗ ᖃᐅᔨᓴᕆᓂᖅᓂᒃ, ᑲᑎᒪᔨᖅᓄᑦ ᖃᐅᔨᓴᖅᑎᑦ ᐱᓕᕆᓂᖅᓴᓂᑦ ᑲᑭᒪᐅᖃᖅᑎᑦ ᖃᐅᔨᓴᖅᑎᑎᕐᓄᑦ ᐱᓕᓗᒍ ᓯᓚᐅᑦ ᐊᓱᐃᓂᓴᖅᓗ ᐊᒻᒪ ᑭᖑᔪᓂᖅᓗ.	8) ᓯᓚᒧᑦ ᐅᖃᖃᑎᒋᑐᓂᑦ ᐱᓕᓗᒍ ᓯᓚᒥᑦ ᓯᓚᐅᑦ ᓯᓚᐅᑦ ᖃᐅᔨᓴᕆᓂᖅᓂᒃ: ᐊᓂᔪᓂᑦᓴᖅ ᐱᔭᕇᑎᑎᕐᓴᖅ: Lᓕᕐᑭᐸᖅ ᓯᓚᒥᑎᒃ ᓱᓇᐃᐅᖏᓇᓴᓂᒃ ᖃᐅᔨᓴᖅᑎᑎᓂᒃ, ᐃᓕᓴᖅᐯᓯᓚᓵᓂᒃ, ᐊᒻᒪ ᐃᓇᓂᒃ ᐊᖏᖓᓄᐯᓂᑦ ᓯᓚᐃᓂᓴᓗ ᐱᓕᓂᑦ ᓯᓚᐅᑦ ᐊᓯᔾᑎᑎᕐᓂ.	9) ᐊᐃᐊᓱᓇᐅᑦ ᐃᒪᒍᑦ ᐊᖏᐅᑎᖓᓄ ᐅᐊᓂᓇᖅᓄᓂ ᐊᑦᑕᓇᖅᑎᐅᑦ ᓯᓚᐃᓂᓴᓗ ᓯᓚᐅᑦ ᖃᐅᔨᓴᕆᓂᖅᓂᒃ: ᐃᑭᓂᒃ ᖃᖓᓚᐅᓂᖅᓂᒃ: 600-1400 ᑲᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦᓗᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐄᐅᒥᑎᒃᑎᑐᑦ ᐃᓱᒪᖃᖅᓴᖅ ᐱᓚᖏᓂᓇᒥᐅᓇᖅᓴᖅ ᐊᑦᓯᓂᒃᓇᑦ ᐃᑭᖅᓇᑦ ᐱᓕᕆᖃᑎᖅᑎᖅᓴᖅᓄᓇᑦ ᑭᐅᔪᓂᒃ ᑲᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦᓗᑦ ᒥᑎᔾ ᐅᖅᑐᖅᓴᖅᓴᖅᑎᑦ.	ᐱᖓᓱᓕᕆᓂᖅᓴᖅ 1: ᓯᓚᒧᑦ
2) ᓯᕐᔪᑎᒃᓴᓚᐅᑦᓴᖅ ᐊᒥᐅᓇᖃᐅᑦ ᓯᓚᐃᑦᓚᐊᓴᖅᓱᓄᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐊᑕᑐᐊᖃᖅᑎᖅᓴᖅᓂᓄᑦ ᐊᑕᑐᒃᓯᓂᖅᓂᑦ ᑲᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦ ᐊᓗᒪ ᐅᓱᓚᓯᐊᓂᓴᖅ ᐱᑭᖅᑐᑎᓂᑦᓴᖅᓯᓂᑦ ᐅᑦ ᕿᑭᖅᓯᓱᓚᖅᓴᖅ ᐅᖅᓯᒃᓴᖅᓄᑦ ᐱᓇᓯᐊᖏᓱᐅᓂᑦ ᓯᑐᓂᒃᓴᓂᑐᓂᑦ ᒥᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦ ᐊᓗᒪ	7) ᑎᑭᐅᑎᐊᑦᓚᐊᓂᖅ ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᓂᒃ ᑐᖃᖏᑐᓄᓚᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦᓗᑦ ᓯᓚᐃᑦᓚᐊᓴᖅᓱᓄᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐊᓯᐊᓂᓪᓚᖅᓯᓚᔪᓄᑦ ᐊᑭᓚᑕᑭᓂᐅᑦ ᐊᑕᑐᒃᓯᓂᖅᓂᑦ ᐃᓕᓚᓂᒃᓴᓂᖅ, ᐊᓚᓚᓯᐅᑦ ᐃᓚᔪᓄᑦ ᐱᓕᕆᓂᖅᓴᖅᓄᑦ ᐅᑭᐅᖅᓯᓂᖅᓂᑦ ᐊᓯᔾᑎᑎᕐᓂᑦ ᐱᓕᓂᑦ ᓯᓚᐅᑦ ᐊᓯᔾᑎᑎᕐᓂᖅ.	10) ᓄᑐ ᑕᐃᒃ ᑎ ᒪᐃᔨᐅᑦ ᓯᓚᐃᑦᓚᐊᓂᖅ ᑐᑭᓯᐅᑎᖅᓴᖅᓂᒃ ᓯᓚᐅᑦ ᖃᐅᔨᓴᕆᓂᖅᓂᒃ: ᓇᐸᖅᑐᐃᓚᓂᒃ, <ᑭᖅᓴᖅ ᖃᓚᓂᖅᓂᒃ: 1100-1700 ᑲᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦᓗᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐱᑕᖃᖅᑎᑦᓗᒍ ᓯᐅᒥᖃᓚᐅᑎᒃᐃᓇᓚᐅᑦᓴᖅᓯᓂᑦ, ᑭᐅᑦᑎᓇᑦ ᐱᓕᐊᖅᑎᑕᐅᑎᒃᐃᓇᓚᐅᑦᓴᖅᓯᓂᑦ, ᐄᐅᒥᑎᒃ ᐊᓂᓴᖅᓂᒃ ᐅᐃᐃᑦ ᓇᓇᑦᓂᑦᓗᒍᖅᓴᖅᓂᒃ ᑕᒪᓐᓇᑦ ᓇᓗᓇᐃᖏᓇᑦᓗᑦᓗᑎᒃ ᓯᓚᐅᑦ ᓂᑦᓚᐸᓕᓚᐅᓴᓗᑦ.	ᐱᖓᓱᓕᕆᓂᖅᓴᖅ 2: ᓯᓚᐃᑦᓚᐊᓂᖅᓂᒃ
3) ᐅᓇᑕᒥ ᑲᑕᐅᓯᒪᔨᖅᓂ ᓕᓴᐅᑦᓄᑦ ᑲᒪᒋᑦ ᖃᓕᓯᐊᖅᓯᒪᓂᖅᓂᑦ ᑭᐅᑐᒥᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᖃᐅᔨᓴᕆᓂᖅᓂᒃ ᐅᓇᑕᐅᑦ 12-ᓄᑦ ᐅᑭᐅᓄᑦ ᓂᐅ-ᓕᓴᐅᓄᑦ ᑭᓇᐅᔾᔨ ᓕᐅᔾᑎᓂᐅᒃ ᑲᒪᒋᑦᓴᖅᓂᖅᓂᑦ ᑭᐅᑐᒥ ᐱᓕᕆᔨᐸᑕᐅᑭᓱᓚᐅᑦᓴᖅᓂᖅᓂᑦ ᑎᑎᖅᑲᒥᒃ ᐊᖏᔪᖅᑭᓂᓂᖃᖅᑐᑦ ᒥᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦ	6) ᐊᖏᔪᓇᓂᓂᒃ ᓴᓇᓄᐅᑦ ᓯᓚᒧᑦ ᐅᒪᔨᓂ ᖃᓄᐃᓕᓕᒫᓂᖅᓂᒃ: ᐅᒪᔨᓂ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐃᓄᐃᑦ ᐅᓂᒃᖃᖅᑎᑦ ᒥᖅᓴᓂᑦ ᓴᓇᓄᐅᑦ, ᐊᓇᓇᒥᐅᐅᔪᑦ ᐅᒪᔨᓄᑦ, ᐱᔭᕇᑎᑎᕐᓴᐅᔭᖅ ᑲᑎᕐᑎᓂᓄᑦᓴᖅ ᓯᓚᓇᐃᖅᑐᓂᒃ ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᑦ ᐅᓂᖅᓂᒃ ᐅᑭᐅᖅᓯᓂᖅᓂᑦ ᐃᓄᐃᑦ ᐅᒪᔨᓴᖅ ᐅᓂᖅᓂᒃ ᐅᑭᐅᖅᑕᕐᓄᑦ ᐅᒪᔨᓄᑦ ᐊᓯᔾᑎᐅᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᑦ.	11) ᐊᐅᓱᐃᔭᑐᒃ ᖃᒪᓕᕆᖃᖅᓄᖅᓴᖅ ᑲᓇᐃᑎᐊᑦ ᐃᓕᓴᐅᑕᑎᑎᓵ ᓯᓚᐅᑦ ᖃᐅᔨᓴᕆᓂᖅᓂᒃ: ᐊᐅᓱᐃᔭᑐᐅᑦ ᖃᓚᓂᖅᓂᒃ: 1500-1900 ᑲᓪᓕᐅᔭᑐᐅᑕᐅᓪᓕᖅᑎᑦᓗᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐅᐃᐃᑦ ᐊᓱᐊᓂᖅᓄᖅᓴᖅᓂᒃ ᐊᐅᓪᓚᑎᓪᓗᒍ ᐱᓕᓂᖅᓄᖅᓴᖅᓂᒃ ᐊᑦᓪᓚᐃᑦ ᓄᓇᓕᒫᓂ ᑲᓇᑕᒥ ᐅᓂᒃᖃᖅᓄᖅᓴᖅᓂᖅᓂᒃ ᐃᓱᒪᓕᕆᖃᖅᑕᐅᔪᓂ ᐄᐅᒥᑎᒃ ᐊᖏᔪᖅᑎᑦ ᓯᓚᐃᑦᓚᐊᓴᖅᓱᓄᑦᓴᖅᓯᓂᑦ ᐅᑦᓗᒍ ᐊᐅᓪᓚᑎᓪᓗᒍᖅᓴᖅᓂᒃ ᐊᐅᑦᓯᓂᒃᓗᒍ ᑕᕐᔪᐊ ᐱᓚᓱᓂᐃᑦ ᐱᓇᓱᐊᖏᓂᑦ ᓯᓚᐅᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᑦ.	ᐱᖓᓱᓕᕆᓂᖅᓴᖅ 3: ᑲᒪᒋᑦᓴᖅᓂᒃᖃᓕᓯᐊᖅᓯᒪᓂᑦ
4) ᐊᒥᓴᖅᓱᓂᖅ ᐱᖓᓱᓇᖅᑎᑦ ᐱᑕᑭᐅᓚᓂᓕᒫᖓᓱᐊᑎᑦᓴᖅᓯᓂᖅᓂᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᑲᓇᑕᒥ ᐊᑐᓗᐊᑦᑕᐃᓕᓂᓂᑦ ᓯᓚᒧᑦ ᐊᑐᐊᖏᓱᐅᓂᑦ ᐊᓯᔾᑎᑎᕐᓴᖅ, ᐊᒻᒪ ᑭᖑᓂᖅᓂᑦᓗᒍ ᐃᓅᓗᐊᖅᑐᓂᒃᓴᖅᓂᒃ ᐊᑐᐊᖏᓱᐅᓂᑦ ᐅᐃᓗᐊᖅᓯᓂᒃᓴᖅᓂᒃ ᐊᑐᓂᑦ ᑕᕐᔪᐊ ᐱᓕᓂᑦ ᐱᓕᕆᓂᖅᓴᖅᓄᑦ ᐱᓇᓱᐊᖏᓂᑦ.	5) ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᒍᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᑦ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᑦ ᖃᓄᐃᑦ ᐃᓕᓴᐅᑕᑎᑎᓵ ᐅᒪᔨᓴᖅᓂᒃ ᐱᓇᓱᐊᖏᓂᑦᓴᖅ ᑕᐅᖅᓯᓱᐃᓕᓴᐅᑕᐅᓪᓕᖅᑎᑦ ᐱᓚᖏᓂᓇᒥᐅᓇᖅᓴᖅ ᐊᖏᔪᖅᑭᓂᓂᖃᖅᑐᑦ ᐃᓄᐃᑦ ᐅᒪᔨᓴᖅ ᓂᐅᔪᑎᑎᓂᐅᑦ ᐅᐃᐃᑦ ᐅᒪᔨᓴᖅ ᐱᑕᖃᖅᑎᑎᑎᓂᐅᓂᓂᒃᓂᖅᓂᑦ.	12) ᐊᒥᓴᖅᓱᓂᖅ ᓴᓂᓗ ᑎ ᑐᑦᓴᑐᑦ ᓯᓚᐅᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᑦ ᓯᓚᐅᑦ ᖃᐅᔨᓴᕆᓂᖅᓂᒃ: ᓄᓇᓕᓴᐅᑎᓂᓗᒍ <ᑭᖅᓴᖅ ᖃᓚᓂᖅᓂᒃ: Lᓪᓚ ᐱᔭᕇᑎᑎᕐᓴᖅ: ᑐᑦᓴᑐᑦ ᐅᖅᓯᓚᔪᓂᖅᓗ ᖃᐅᔨᓴᖅᑕᐅᔪᓂ ᓴᖅᑐᓂ ᐱᑎᐊᑕᐅᓯᒪᔪᖅ ᐄᐅᒥᑎᒃᓯᓂᖅᓗᒍ ᑲᑎᓄᓪᓚᖅᓂᒃ ᐊᖏᔪᖅᑭᓂᓂᖃᖅᑐᑦ ᐃᓄᐃᑦ ᑕᕐᔪᐊ ᐱᓚᓱᓂᐃᑦ ᐱᓇᓱᐊᖏᓂᑦ ᓯᓚᐅᑦ ᖃᐅᔨᓴᖅᓂᒃᖃᖅᑐᑦ.	ᐱᖓᓱᓕᕆᓂᖅᓴᖅ 4: ᐊᒥᓴᖅᓱᓂᖅ

ᐱᓕᕆᓂᖅ 1 ᖃᐅᔨᓴᕆᓂᖅ	ᐱᓕᕆᓂᖅ 2 ᖃᐅᔨᓴᕆᓂᖅ	ᐱᓕᕆᓂᖅ 3 ᖃᐅᔨᓴᕆᓂᖅ
1 8 > 9 v ^ v 2 7 10 v ^ v 3 6 11 v ^ v 4 > 5 12	5 4 > 9 v ^ v 6 3 10 v ^ v 7 2 11 v ^ v 8 > 1 12	1 < 8 < 9 v 2 > 7 > 10 v 3 < 6 < 11 v 4 > 5 > 12

ACT I

Climatic Thinking

1 Uncertain Climate for Scientific Wisdom

ᓇᓗᓇᖅᑐᖅ ᓂᒃ ᓂᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕐᓂᒃᑯᑦ ᓂᒃᑐᑐᕐᒪᑦ

ᖃᐅᔨᓕᐊᓐᓴᖅᑕᐅᓂᓴᒃ ᓂᒃᓴᕐᕕᐊᑦ ᐅᖅᑰᓂᒃᓴᓕᓐᓂᐊᓂᓴᒃᑕ ᐃᓇᓂᕐᒪᑦ
The discovery of global warming was patently a social product, a
ᑕᐃᒪᐃᑎᑕᐅᔪᓐᓇᖅᓂᕐᒪᖔᖅ, ᐊᓂᒪᖃᖅᖃᑎᒌᓐᓂᔭᐅᔪᑦ ᐃᓂᒪᒋᖅᓂᐅᑯᑦ ᓴᖅᑭᐊᖅᓂᕐᒪᔪᑦ
consensus of judgments arising in countless discussions among
ᐊᒥᓂᓄᑦ ᐅᖃᖅᖃᑎᒌᓐᓂᕐᓂᐅᓄᑦ ᐊᒥᓂᔪᕕᐊᑦ ᖃᐅᔨᒪᔪᕕᐊᑦ.
thousands of experts.

Spencer Weart 2003

ᐊᐅᓂᐊᓗᐅ ᐱᒋᑦᓄᖅᓂᒪᖔᖅᑐᑦ ᖃᐅᔨᒋᑦᓄᓂᕆᐅ ᑐᑭᓂᖃᓐᓂᕐᓂᐅᓄᐅ ᓂᒃᓴᕐᕕᐊᑦ
We have made considerable progress toward unraveling the
ᐊᐅᓪᓚᕐᓂᕐᒪᑕ, ᑭᓂᐊᓂ ᖃᐅᔨᒪᓴᑦ ᓂᓄ ᒥᑭᒃᖃᖅᑎᑕᐅᑎᑦ
complexities of the Earth system, but what we know is
ᖃᐅᔨᒪᓕᕐᓂᑕᑎᓕᓐᓄᑦ.
still dwarfed by what we don't know.

James W. Kirchner 2003

ᑲᐃᓴ ᑐᑦᓂᓄᑦ ᑕᒪᐅᑯᓂᒃ ᐱᓂᒍᒪᐃᓕᓐᓂᓄᑦ ᐅᕙᓪᓕᓐᓂᑦ ᓇᑭᑐᐃᓕᓐᓂᑦ ᐊᒻᒪ
Gaia is for those who like to walk or simply stand and stare, to
ᑕᑯᓕᑲᓪᓚᒍᓂᓄᑦ, ᐃᓂᒪᓂᖅ ᒥᐅᓴᓄᑦ ᓂᓪᓕᓐᓂᐊᓂ ᐊᒻᒪ ᐃᓇᓂᐅᑦ ᓴᖅᑭᓯᑐᖅ ᑕᐅᓂᒃ,
wonder about the Earth and the life it bears, and to speculate
ᐊᒻᒪ ᐃᓂᒪᓇᓂᓗᑎᒃ ᒥᐅᓴᓄᑦ ᖁᓇᐃᔨᑕᐅᓕᕆᓇᑐᐃᓇᓚᐊᖅᓂᒃᓂᖅ ᑕᒫᓂᓂᑦ.
about the consequences of our own presence here.

James Lovelock 1979

Each May brings to southern Ontario a warm greening of the land that inspires many to leave the dark shelters which have confined them through much of Canada's winter months. Not commonly recognized is the way in which these human seasonal behaviors interact with a climatic process that some scientists metaphorically see as the Earth's breath. This science of the planet's respiration was unveiled by Charles Keeling in the 1950s. Based on years of recording CO_2 concentrations in the high altitude of Mt. Mauna Loa in Hawaii, this climatologist documented trends that came to be known as the Keeling Curve. This curve reveals a fall in CO_2 concentrations during each "northern spring as the sprouting greenery extracts CO_2 from the great aerial ocean".[1] Following this spring inspiration is a northern autumn that decomposes the organic greenery and exhales the CO_2 back into the atmosphere. Even more curious for Keeling and future climate researchers was the general trend of an increasing exhalation of CO_2 over the span of the twentieth century.[2] As the millennium approached, it became increasingly clear that the GHG emissions of human industrial activities were central to this trend that was heightening the Earth's seasonal breathing. This first chapter in climatic thinking is interested in the historical unfolding of an increasingly complex scientific view on a climatic hierarchy which breathes in response to Western GHG activities.

In its 2001 *Third Assessment Report* (TAR), the IPCC concludes that the consolidation of scientific research indicates that human activities related to GHG emissions are impacting the climate system. Almost a century prior to the TAR and decades before Keeling's research, Svante Arrhenius hypothesized that increased concentrations of atmospheric CO_2 related to rising fossil fuel usage during the Industrial Revolution could warm the planet.[3] His formulas

indicated that with a doubling of CO_2 the Earth's average temperature would increase by 5 to 6° Celsius, with him projecting it to "take three millennia of burning fossil fuels for the amount of atmospheric CO_2 to double".[4] Future generations would, in Arrhenius' words, "enjoy ages with more equable and better climates, especially as regards the colder regions of the Earth, ages when the Earth will bring forth much more abundant crops than at present".[5] The benefits of Arrhenius' gradual projections were limited by many factors, not the least of which was the subsequent increase of coal production from 1000 to 5000 million metric tons and oil production from 20 to 3000 million metric tons between his time and the late-twentieth century.[6] The past few decades have seen scientists become increasingly alarmed by the potential impact this significant increase of fossil fuel production could have on the climate as CO_2 concentrations in the atmosphere trap the heat of the Sun's energy on Earth. Using lengthy ice cores that document the CO_2 levels in the atmosphere for thousands of years, scientists have found that in the millennium prior to the Industrial Revolution CO_2 "in the atmosphere varied from around 270 to 290 parts per million (ppm)".[7] Going further back in time by some 420 thousand years, "the concentration of carbon dioxide in the snowfalls had varied up and down, between a low of 180 and a high of 280 parts per million (ppm)".[8] Ice cores and other pre-historical proxies revealed minor and major fluctuating cycles in atmospheric CO_2 that heralded similar rises and decreases in air temperatures.[9] With the rise of fossil fuel combustion starting in the 1800s a trend becomes noticeable as CO_2 levels reach "about 295 ppm by 1900, 310 to 315 ppm by 1950, and about 360 ppm in 1995".[10] In 2004, measurements at Keeling's Mauna Loa Observatory revealed an unexpectedly large increase of 3 ppm from the previous year, bringing its current concentration to 379 ppm.[11] In contrast to Arrhenius' projected CO_2 doubling, the current scientific consensus is that within the next two hundred years concentrations will be two to four times pre-Industrial levels.[12] Considering the paleoclimate correlation of CO_2 levels and temperature, it is not surprising that "average

surface temperatures increased by 0.3° to 0.6° Celsius" over the hundred years since 1890 – with "nine of the ten hottest years" occurring since 1987.[13]

The West's climatic uncertainty reveals an intricately intertwined world that confronts interdisciplinary science with significant uncertainties about the Earth's climatic hierarchy, as well as what constitutes an adequate political economic response to these changes. Some scientists who recognized the potential social impacts of climate change on the West, other cultures and ecological systems viewed it as their responsibility to advocate for a strong *Kyoto Protocol* to mitigate GHG emissions. Just prior to international political meetings in October 1997, the *Union of Concerned Scientists* – a group of 1500 scientists and 98 Nobel laureates – publicized a statement to express their concern and document why a strong international agreement was required.[14] During the more recent lead-up to the 2005 G8 meeting in Scotland, the scientific leaders from the 11 countries that make up the *Joint Science Academies* released a document that urged world leaders to pro-actively deal with climate change despite the uncertainties which will always exist .[15] This scientific advocacy has arisen from the understandings of a climate science that today is firmly grounded in the global interdisciplinary effort of the IPCC. Through examining the types of climatic uncertainties uncovered by scientists over their historical evolution from Enlightenment to IPCC, the following story will clarify a climatic thinking that can display a measure of objectivity while being politically and socially concerned about the state of the Earth's respiration.

Enlightening Climatic Uncertainties

The eminent climate historian William F. Ruddiman describes the discoveries of climate science since the late 1900s as one of four major revolutions in the Earth sciences.[16] The first was James Hutton's eighteenth century dating of the planet to a much more ancient time than that of the 6,000 year old chronicling of the Earth's beginning by the Christian churches. From this proposition came the research of chemists, physicists, biologists and astronomers, all of

whom have physically confirmed "that our Earth is very old indeed, in fact several *billions* of years old".[17] Charles Darwin is the father of the second Earth science revolution, with his theory of natural selection influencing research that covers a 600,000 million year fossil record and the mysteries of genetics. The third revolution was Alfred Wegener's 1912 proposal of continental drift and the tectonic plate research which has revealed a planetary surface that has been slowly moving "for at least the last 100 million years".[18] In concert with these previous revolutions, climate scientists are displaying a dynamically balanced and yet cyclically changing climatic hierarchy which is interrelated to the evolving changes of biological life and humanity. Understanding the historical steps of Western scientists towards a twenty-first century view of the Earth's climate will highlight some of the problems climatic thinking needs to face in coming to terms with the West's climatic uncertainty.

In his historical survey of Western climate thought, James Fleming begins with the eighteenth century Enlightenment ideas of Jean Baptiste Abbé Du Bos, Baron de Montesquieu and David Hume.[19] Some shared assumptions included a deterministic vision of the climate's impact on culture, a view that Europe's climate had been made beneficial for humans through deforestation and land improvement, and a belief that the climate of colonial America could be improved by deforestation related to agricultural settlement. This enlightened perspective on climate as something which could be improved through "draining the marshes, clearing the forests, and cultivating the soil" remained a major influence on ecological actions "until the middle of the nineteenth century".[20] Exemplary is Benjamin Franklin's 1763 writing that "cleared land absorbs more heat and melts snow quicker".[21] These ideas were informed by the dominant assumptions of the Enlightenment, which included the view that nature was an independent "deterministic mechanism", God was "a debatable hypothesis" and that applied reason could perfect humanity and the world.[22] As such, the beginning of modern conceptions of the climate saw culture as determined by climate, though people could make improvements that would bring beneficial changes to the land's productivity and people's well-being.

With the rise of experimental science, national climate surveys and observational systems in the nineteenth century, many of these Enlightenment assumptions came into disrepute as inexact philosophical musings.[23] The research of Noah Webster at the turn of the nineteenth century found "no evidence for a major climatic change either in Europe or in America" related to human actions, and thus "set the tone for the scientific studies that followed".[24] His findings signified the dawning of a climatic science that uncovers universal laws through an objective distancing of researcher from cultural assumptions that – even in the rationalizing Enlightenment – ensnared human thought in physically invalid premises. While the West's philosophical musing that human actions could influence the climate stretches back as far as Theophrastus, a student of Aristotle, and re-appears during the Enlightenment, the scientific era's foray into anthropogenic climate change largely begins with Joseph Fourier's 1824 reading of a paper that was later published in 1827.[25] Fourier saw himself as "the Newton of heat", a scientist who, in his own words, uncovered the "rational law of atmospheric motion, ocean motion, change of seasons, and so on – a grand geophysical law confirmed in the laboratory and expressed by calculus".[26] His research influenced Arrhenius' 1904 proposition "that increasing the carbon dioxide content of the atmosphere by burning fossil fuels might be *beneficial*, making the Earth's climate warmer and more equable, stimulating plant growth, and providing more food for a larger population".[27] In contrast to present concerns about the potential negative impacts of high CO_2 emissions, Arrhenius envisioned the fossil fuel dependent Industrial Revolution as manifesting a warming climate that could mitigate the eventual cyclical return to "conditions of an ice age".[28]

Arrhenius' theory that CO_2 emissions could influence the climate was largely ignored until the 1940s when increasingly powerful scientific tools and methods documented a warming trend that began in the 1930s, and which seemed to coincide with a century of rising fossil fuel use and CO_2 emissions.[29] While the observed temperature that continued to increase until the early 1960s seemed to support linking these two trends, the 1970s saw this evolving

climate science thrown into disarray by what appeared to be a decade long global cooling.[30] The uncertainty led to a scientific debate throughout the 1970s about whether human actions were contributing to an overall global warming or cooling of the planet.[31] On all sides of the debate there was unanimous agreement "that the first step must be to redouble the effort to understand how the climate system worked".[32] By the end of the 1980s research increasingly supported the view that human GHG emissions were forcing a global warming trend.

An increasing awareness of the climatic hierarchy's complexity has guided researchers through a number of re-definitions of this science, with its late-twentieth century manifestation being described by Weart as a social rather than heroic exploration.[33] Over the past few decades climate change has been clarified by the work of many scientists who have shared their findings, changed opinions, interconnected new variables and followed up with further research. As the possible negative repercussions of the West's climatic uncertainty became apparent, this knowledge sharing was formalized. In Weart's words:

> The social process was so complex, and so important, that the last stage was visibly institutionalized: the workshops, reviews, and negotiating sessions of the Intergovernmental Panel on Climate Change. The discovery of global warming was patently a social product, a consensus of judgments arising in countless discussions among thousands of experts.[34]

This climate change research "was patently a social product, a consensus of judgments arising in countless discussions among thousands of experts".[35]

With the IPCC as the vehicle for synthesizing climate knowledge, the dialogue expanded beyond the physical sciences to include social scientists and governmental representatives who were concerned with the political economic dimensions of the issue. The IPCC's mission is today defined as the assessment of "scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation".[36] Meeting this mission has required over twenty-five hundred

scientific researchers coupled with governmental representatives from more than one hundred countries, all of whom evaluate and synthesize the peer-reviewed research into a consensus report.[37] Weart describes this process:

> The IPCC's method was to set up independent working groups to address each of the various scientific issues. Experts drafted reports drawing on the latest studies, and these were debated at length in workshops… The draft reports next went through a process of review, gathering comments from virtually every climate expert in the world… [Finally] conclusions had to be endorsed by a consensus of government delegates, many of whom were not scientists.[38]

To envision the role the climatic hierarchy had in evolving this interdisciplinary and intergovernmental science it is helpful to focus upon the types of uncertainties that have become apparent over the past few decades of this research.

Though the past few centuries have seen Western interest in anthropogenic climate change rise and wane, the twenty-first century's cresting concern about human-induced warming is largely grounded in the late 1960s. The brief cooling trend which began at that time and continued until the late 1970s led many scientists to project a global cooling that deserved international attention because of its potential impacts.[39] While these scientists extrapolated from research on the Earth's orbital variations that this cooling was related to the planet's move into a new ice age, other researchers wanted to politically move slower with projections that had many uncertainties.[40] By the 1980s these concerns were validated as it became recognized that these cooling projections were not, as Ruddiman explains, accurately considering the impact of human-related activities which emitted GHGs. In his words, "the few scientists who jumped to the premature conclusion that the minor climatic cooling during the 1960s and 1970s was a harbinger of glaciation deserve the criticism they have received" because they overextended their analyses.[41] Despite this mistake, the growing concerns at this time did lead climate scientists to build global knowledge sharing networks that by the early

1980s increasingly indicated a global warming trend. In 1988, the IPCC was created by the *World Meteorological Organization* and *United Nations* environmental agencies to formally coordinate this emerging interdisciplinary research with the result being an exponential increase in knowledge of climate change. Since the 1990s the IPCC has overseen the release of three reports which have successively found more evidence indicating a global warming trend related to human activities. Even with this increasing scientific consensus, there are many significant uncertainties in assessing the effects of change on the climatic hierarchy.

Many of climate change's uncertainties are based in a lack of knowledge concerning the possible nonlinear effects of rising GHGs, or what scientists refer to as positive and negative feedbacks.[42] Positive feedbacks amplify the warming trend, and include interactions like the release of methane trapped in Arctic permafrost as the Polar Regions warm. The Arctic as a region is of increasing interest to scientists because its warming could potentially have serious repercussions in furthering climate change for the rest of the world because of three significant feedbacks identified by the ACIA:

> One involves changes in the reflectivity of the surface as snow and ice melt and vegetation cover changes, the second involves changes to ocean circulation as arctic ice melts, adding freshwater to the oceans, and the third involves changes in the amounts of greenhouse gases emitted to the atmosphere from the land as warming progresses.[43]

Mitigating these effects are negative feedbacks that can moderate changes through interactions like the warming-inspired increase of cloud cover and air moisture which will reflect more of the Sun's energy away from the Earth. Other research suggests that the potential changes in ocean circulation due to the Arctic ice melt could shift the thermohaline circulation and significantly cool Western Europe to temperatures comparable with similar latitudes on the east coast of Canada.[44] These feedbacks signify the uncertain complexity involved in modeling the global ecological interdependence of the climatic hierarchy.

To get a sense of this interdependence climate scientists and the IPCC have placed great emphasis on detailed General Circulation Models (GCMs) that include everything from land cover and snow to gas chemistry and atmospheric pressure. As the geographer David Demeritt explains, these GCMs "simulate the behavior of the climate system by dividing the earth into a three-dimensional grid and using supercomputers to solve mathematical equations representing exchanges of matter and energy between the grid points".[45] One of his main problems with these models is that where a lack of knowledge persists the variables tend to be hypothesized based upon the assumptions of the modeler. One such problematic assumption identified by Weart is smooth and gradual climatic changes employed to maintain speed and power in computer projections of complex variables.[46] This assumption is contradicted by paleoclimate research which provides insight into the driving forces of Earth's historical climate cycles by utilizing global temperature proxies like ice cores, deep ocean cores, "soft-sediment cores hand-driven into lake muds", tree rings and coral samples.[47] These records indicate that the climate system has in the past had major shifts in temperature occurring over periods as short as a decade,[48] and that in going beyond the current range of temperatures these potential changes can increase the level of uncertainty concerning the climatic hierarchy's future progression. They also raise the short-term specter of increasing extreme weather events and their uncertain impacts on people, communities, cultures, ecologies, the global political economy and the biosphere. In contrasting the assumption of linear gradual change in mean temperature, this disruptive paleoclimate variability limits the predictability of computer models and challenges the evolution of climate science.

To approach such ecological and researcher uncertainties the IPCC uses both quantitative and qualitative scales to determine the probability of various projections.[49] The quantitative scale take into account observational evidence, modeling results and theory to delineate five levels of confidence concerning the probability of an event's occurrence. These range from very high confidence at 95 percent or greater to very low confidence at 5 percent or

less. For some data a quantitative scale is not appropriate, in which case a qualitative scale is utilized which considers the degree of scientific consensus (low or high) and the amount of evidence (low or high) to create four "state of knowledge" categories: well established (high and high), established but incomplete (high and low), competing explanations (low and high) and speculative (low and low). These probability scales document Western scientific knowledge on the uncertain relation between human activities and the climatic hierarchy.

The West's climatic uncertainty confronts scientists with another significant challenge that has methodological implications of a more fundamental nature. It concerns the question of how to objectively project natural processes that include humanity and the cultural assumptions of the researcher. This problem has marked the history of Western climate knowledge since the rational Enlightenment. Over and over philosophical and scientific beliefs filled in the gaps of climatic knowledge, with the passage of time revealing the various theories to be limited views. This is not all that surprising as the climatic hierarchy is the context within which science is conducted, and thus there are epistemological research issues which need to be considered. As Weart relates, the human actions that are producing the GHG emissions are the greatest uncertainty,[50] and as such their influences and trends need to be methodologically considered for Western science to approach climatic thinking.

The IPCC approaches this human uncertainty through the creation of emission scenarios that integrate historical trends with possible global political economic and social configurations that could impact economic growth, technological change and future emissions. These scenarios offer projections of anywhere between a sevenfold increase to an overall decrease in emissions from 1990 levels by the year 2100, with the average projection being a threefold increase.[51] While the IPCC's research displays a growing scientific consensus that GHG emissions since the Industrial Revolution are impacting the climatic hierarchy, Ruddiman has recently proposed extending of humanity's impact on the climate by 8,000

years to the dawn of agriculture.[52] His research is important because it deepens our sense of the intractable nature of this epistemological issue.

After years of studying climate cycles Ruddiman "noticed something didn't seem to fit",[53] which he highlighted by first explaining the value of incongruency in historical cycles:

> Because "cycles" are by definition regular in both length (duration in time) and size (amplitude), they are inherently predictable. This gives climate scientists like me a major opportunity. We can look at past records of climate and see where and when the natural cycles were behaving "normally", but if we then find a trend developing that doesn't fit into the long-term "rules" set by the natural system, we are justified in concluding that the explanation for this departure from the norm cannot be natural.[54]

Two things did not appear to fit with his understanding of the various cyclical processes. The first was a methane increase that began about 5,000 years ago during a cycle that should have manifested decreasing levels. He found evidence which suggests this increase was related to the beginning of a large-scale human transformation of landscape in Southeast Asia for the irrigation of rice. Coupled to this aberration was an even earlier anomalous rise of CO_2 beginning 8,000 years ago which he finds to be primarily related to the loss of sequestration capacities arising from deforestation which began with agricultural development in the Middle East. Through combining human historical research with his understanding of the climatic hierarchy's various cycles, Ruddiman concludes that since humans have been involved in climate changes for an extensive period of time "the more important (and more difficult) task may now be to separate human impacts on climate from natural variations".[55] Though Ruddiman's hypothesis extends the historical perspective on human impacts that need to be considered, it needs to be understood that it is with the Industrial Revolution that gas emissions have quickly risen "to levels well beyond the natural range of the last 400,000 years".[56] Model projections of a two to four time emission increase leads Ruddiman to point out that these potential CO_2 levels have not been documented in the "Earth's atmosphere for at

least the last 5 to 10 million years".[57] Since the Earth's temperature has historically had a delayed response measured in decades to these atmospheric emissions, the current rising global temperatures would seem to reflect the first steps in uncertain changes that are responsive to the knowledge, values and beliefs of anomalous civilizing developments which are simultaneously the historical context of Western science.

Gaia's Climatic Indeterminism Emerges

A similar methodological uncertainty to that found in climate science has been encountered by quantum physicists in the form of *Heisenberg's uncertainty principle*. Related to the microscopic realm of quantum physics, the uncertainty principle limits the ability of researchers to simultaneously know the position and velocity of an electron such that as knowledge of one variable increases knowledge of the other decreases.[58] This emerging twentieth century quantum view is the latest scientific perspective on uncertainty that Ian Barbour identifies as having two historical forerunners since the Enlightenment. The first approach attributed uncertainty "to temporary human ignorance, in the conviction that there are exact laws which will eventually be discovered".[59] Climate scientists of this view hold that complete knowledge of ecological complexities will be achieved when something similar to Fourier's "grand geophysical law" is understood. Uncertainty of the second type "is attributed to inherent experimental or conceptual limitations" where "the observer inevitably disturbs the system he is observing".[60] In this view, the most fundamental factor limiting climatic science is the global epistemological uncertainty that interlinks human GHG emissions to the climatic hierarchy's changes. The final perspective defines uncertainty as an "indeterminacy in nature", which Barbour finds to make the most sense because it recognizes the limits of abstractions while affirming the uncertainty principle's indeterminacy.[61] Many quantum physicists agree on this one point: uncertainty is secondarily a function of scientific ignorance and epistemological uncertainty, and primarily related to fundamental properties of nature which transcend

complete knowledge.[62] With this uncertainty, Barbour states, the "future is not simply unknown, it is not decided", though it is not completely open since the present determines "the range of future possibilities".[63] Rather than a physicist "postulating that an electron has a precise position and velocity", Barbour concludes "that it is not the sort of entity which has such properties at all".[64] The closest climate science has come to considering this kind of indeterminism is found in the debate surrounding James Lovelock's *Gaia Theory*.

While many researchers acquainted with Gaia theory assume it "refers to a global 'superorganism' that has evolved by natural selection", this is an understanding of the 1970s that was "rejected in the early 80s".[65] Gaia theory's evolving sense now posits four basic tenets: "life alters its environment", "life forms grow and reproduce", "the environment constrains life" and "natural selection occurs".[66] Providing a temporal frame of reference on this interaction of biological life with Gaia's elemental processes of geology, hydrology and climatology, David Schwartzman explains that prior to life's involvement in the sequestration of CO_2 the Earth was much warmer.[67] The origin of life allowed Gaia to sequester increasing amounts of atmospheric CO_2 within the land biota, all of which began in the global tapestry of soil. Subsequent decreases in the atmospheric concentrations had the effect of lowering "surface temperatures from near 100°C to the present global mean of 15°C".[68] Anne Primavesi states that in Gaia Theory this evolutionary process "is called 'tight coupling': the close relationship between the evolution of living organisms and the evolution of their physical and chemical environment which constitutes a single evolutionary process".[69] From her view, this theory conceives the planet as an entity "which possesses features of organization analogous to (not identical with) the physiological processes of individual organisms".[70] The difficulties researchers have in grasping this emerging view of Gaia led Lovelock to write a letter to the journal *Climatic Change* which states that just as "Quantum theory is incomprehensible because the universe itself is far stranger than the human mind can contemplate", Gaia science

"is difficult to understand because we are not used to thinking about the Earth as a whole system".[71]

Lovelock's letter was in response to a *Climatic Change* debate on the relevance of Gaia Theory to climate science. Both J. W. Kirchner and Tyler Volk proposed that the focus of Gaia Theory on concepts of homeostasis and environmental optimization for biological life does not properly account for the evidence of negative feedbacks that impact optimal environmental conditions for biological life.[72] Considering the increases of atmospheric CO_2, Kirchner stated that documentation of only "a modest increase in terrestrial photosynthetic uptake of CO_2" acts as "an empirical rebuttal to Gaian notions of homeostasis and optimization" because it reveals atmospheric CO_2 is not tightly regulated at a biological set point".[73] Gaia proponents Timothy Lenton and David Wilkinson opined back that "a combination of positive and negative feedback does not preclude regulation" as there are many examples of complex systems that regulate through a mixture of these feedbacks.[74] Responding with another critical essay, Kirchner clarified that he agreed "that coupling between the atmosphere and biosphere should naturally give rise to feedbacks" which can also "exhibit 'emergent behaviors', including self-regulation", but he worried that Gaia Theory "could lead to a false confidence that once one accepts that biological systems are intrinsically self-regulating, understanding the Earth system is easy".[75] A check against research complacency was needed in Kirchner's opinion because the "considerable progress" in developing climate knowledge "is still dwarfed by what we don't know".[76] Contrasting Gaia Theory's indeterminate sense, Kirchner proposed that scientists should be "thinking mechanistically instead" as they research a world where natural selection favors "organisms that can best exploit... the environmental services that their ecosystem provides".[77]

The letter written by Lovelock responded directly to this critic by offering a comparison of quantum theory and Earth system science:

> The fact that reductionist science cannot offer a rational explanation of quantum phenomena like entanglement, nor of whole systems phenomena such as emergence, does not mean that these phenomena do not exist. Their existence confirms the limitations of the Cartesian view of the universe.[78]

Offering a similar Gaia critique, David Abram goes so far as to argue that mechanistic science cannot last for it "either obliterates the world in a final apotheosis of denial, or else gives way to another mode of science: one that can affirm, rather than deny, our living bond with the world that surrounds us".[79] These two alternative ends of denial and affirmation are respectively consistent with the disruptive impact of the West's climatic uncertainty and climate science's evolutionary response to the emergence of an indeterminate climatic hierarchy. For researchers who are having difficulties making the shift, like Kirchner and Volk, Lovelock advises them to "leave Cartesian scruples aside for a moment" and consider that "you do not need to know the details of a friend's biochemistry to know them as a person and in a similar way you can envisage Gaia without knowing the recondite details of its geochemistry".[80] In fact, Lovelock proposes that "humans have the ability to recognize whole systems instinctively, and this ability makes the Earth understandable outside science and it can make Earth System science more comprehensible to scientists".[81] This Gaian instinct would appear to be inherited by humanity from the evolution of life's participation in the Earth's climatic hierarchy, the ultimate biological indeterminism underlying scientific research of the West's climatic uncertainty.

Barbour's analysis of the uncertainty principle led him to conclude that "the primary significance of modern physics lies not in any disclosure of the fundamental nature of reality, but in the recognition of the limitations of science".[82] In the light of quantum realities, Barbour finds that it is no longer possible for science to be about a complete metaphysical or mechanical depiction of nature. Both quantum indeterminism and Gaia's emergent climatic hierarchy suggest that a scientific methodology is needed that can come to understand a

participatory reality where the choices of researchers and their culture can evoke behavioral changes in the phenomenal scales under study. Evolving from this perspective of the climatic hierarchy's emergent changes are questions concerning a research methodology that can facilitate a human instinct for engaging Gaia's response to the West's climatic uncertainty. To begin clarifying this methodology underlying climatic thinking I returned to a resonance between quantum physics and climate science's evolving interdisciplinarity.

While climate change's complex emergent properties have guided the IPCC and climate science towards an interdisciplinary method that largely falls short of Lovelock's sense of Gaia, the physicist Shimon Malin describes a similar shortfall in the quantum response to the uncertainty principle. In his view, the problem for physicists is that "quantum mechanics is based on the principle of objectivation", and as such is mired in past scientific assumptions about the world which "cannot provide us with a new world-veiw".[83] Concerned with a revised methodology for engaging nature's indeterminism, Malin states that an indication of this new science is revealed by "precisely where the abstraction of the principle of objectivation fails" in the present science.[84] Malin explains that to accurately describe the object of research requires "realizing that its attributes do not belong to the object alone but to "the whole phenomenon" (i.e., the object plus measuring apparatus)".[85] This recognition leads him to conclude that scientific assumptions about the world more accurately reflect the chosen method for relating and understanding the world rather than any fundamental reality. More pointedly, he states that the claims that "so-called inanimate entities are really lifeless is a statement about the scientific method and not about the entities" since it is clear that these assumptions "can only be verified or disproved through experiences and modes of knowledge that lie outside of the methodology of present-day science".[86] The implication for my climatic thinking is that the bioregional and cultural connection of researchers to Gaia's climatic hierarchy requires a methodology which can embrace and transcend objectivity. For both

Malin and Barbour, Bohr's discovery of the *complementarity principle* is a good starting point for defining such a new methodology.

Complementarity has provided physicists with a means for examining quantum realities within a context of nature's indecision. Barbour explains that "*complementarity* in physics underscores the abstractive and symbolic character of concepts, the indirectness of their relation to observable phenomena, the limitations of models, and the inadequacy of attempts to visualize reality in terms of the categories of everyday experience".[87] An analogous statement is made about climate science by Demeritt when he explains that climate change is inconceivable beyond this society's "social practices, standardized instruments, orbiting weather and communication satellites, and computer models through which they are made manifest".[88] The complementarity response to quantum physic's indeterminate situation is to engage different perspectives because of the recognition that, in Barbour's words, "differing aspects of the structure of events are interpretable by differing models, each of which is incomplete and applicable only to certain experimental situations".[89] Knowledge gained from this approach of multiple views increases the understanding of quantum realities, but uncertainty is never completely reduced. While the IPCC's interdisciplinarity can be understood as initiating climate science's unique approach to complementarity that includes multiple rather than dual perspectives, its next step may require methodologically moving towards a Gaian climate science which, as with quantum physics, can engage the paradoxical situation of an ever-increasing knowledge which is continually "dwarfed by what we don't know".

The question does arise as to whether it is valid to utilize the principle of complementarity outside the discipline of quantum physics in my attempt to continue evolving the IPCC's interdisciplinary response to Gaia's climatic indeterminacy. Barbour explains that Bohr, the founder of complementarity, thought "that the epistemological lesson of atomic physics can be extended to other phenomena susceptible of analysis by alternative conceptual

schemes".[90] Adding some critical rigor to Bohr's belief, Barbour suggests three cautions in making these extensions. First, the application needs to be understood as "*analogical not inferential*" such that there are "independent grounds for justifying in the new context the value of two alternative sets of constructs".[91] With regards to this caution, the emergent indeterminacies of the climatic hierarchy have already resulted in an interdisciplinary and intergovernmental effort to come to an understanding of the West's climatic uncertainty. His second caution is related to the definition of complementarity in physics, which "refers to *different ways* of *analyzing a single entity* under varying conditions".[92] Because of this, Barbour suggests that "it appears more dubious to refer to various disciplines as complementary, unless they are all assumed to analyze the same set of events".[93] While the IPCC brings together a diverse amount of research that deals with varying aspects of the climatic hierarchy, it is also equally true that the fundamental reason for the IPCC's existence is due to one significant "set of events" whose possible negative global effects has facilitated this research coordination: the West's climatic uncertainty. His final caution on the mistaken use of complementarity "as a veto to *the search for unity*" resonates with Kirchner's concern that Gaia Theory could create research complacency. Barbour clarifies that physicists "do not say that an electron is both a wave and a particle, but only that under varying circumstances it exhibits wave-like and particle-like behavior".[94] Researching these quantum probabilities requires examining what Malin referred to as a "new paradigm" or methodology for understanding that which currently transcends researcher assumptions. To respond to this caution, climate scientists like Kirchner will have to move beyond mechanistic approaches so as to more comprehensively engage the indeterminate nature of Gaia's climatic hierarchy. A search for unity will require the IPCC to expand its interdisciplinary methodology so as to more fully integrate humanity's historically emerging biological and cultural dimensions.

Just as Fleming concludes that the inextricable nature of the climate's human dimensions means that historical research is required which can highlight "the intellectual,

social, and cultural roots of environmental issues",[95] Barbour also states that the implications of quantum physics requires the physical sciences to be more open to the social sciences, the humanities and even religion. In his view, there is no absolute dichotomy between objective and subjective knowledge since in this new observation of physical reality the assumption of a completely objective science merely "neglects the role of the subject in science".[96] Barbour utilizes Alfred Whitehead's process philosophy as a framework for extending this interdisciplinarity because it is one of a few modern Western philosophies that allows scientific and religious approaches to come together and exemplify complementarity. He concludes that when science and religion are aware of the complementarity between their knowledges, then it is possible to recognize a methodology where rationality "is fulfilled, not abrogated, by revelation; reflective inquiry can coexist with religious commitment".[97] In 2000, Barbour extended this analysis of quantum complementarity to environmental sustainability, stating that scientists need to share their knowledge of environmental changes, while religious participants need to offer questions concerning the meaning of these changes in relation to ways of living.[98] Malin's research similarly led him to propose that complementarity as a methodological response to indeterminacy inevitably brings forward a contemplative science that has resonances with Whitehead's process philosophy and the Neoplatonism that influenced hermeticism. He states that since the "very nature of each and every actual entity is one of interdependence with all the other actual entities in the universe", science needs a contemplative method for merging objective knowledge with an experiential appreciation of indeterminism.[99] A contemplation of Gaia's emergence also makes apparent to Primavesi the necessity of religious theologians who can engage ecological scientists and stress "the connectedness, diversity and sacredness of all beings" that is essential for living in "the dynamic system we call Gaia".[100] The emergent properties of Gaia's climatic hierarchy calls forth an interdisciplinarity that can include religious wisdom so that the sacred, in Primavesi's words, has room "to be transcendent to and at the same time present within a world no smaller

than the whole within which we exist; a whole which can only be glimpsed with awe".[101] Such a methodology for climatic thinking is hermetically contemplated in more detail in my third act.

The earlier cautions provided by Barbour offer a detailed set of criteria for evolving science towards a more comprehensive understanding of the West's indeterminate involvement in Gaia's emerging climatic hierarchy. This proposed extension of complementarity suggests that the IPCC's interdisciplinary process can be undermined if the perspectives are not, according to Barbour's second caution, looking at the same natural phenomenon under "varying conditions". Focusing on the West's climatic uncertainty in my interdisciplinary act of climatic thinking, these varying conditions can be recognized as cultural, religious, political economic and science perspectives that make up not only the IPCC's interdisciplinary and intergovernmental representation, but other powerful voices in past and present debates. Since these various views can influence public understanding and the range of possible responses, they are important factors that need to be considered in ensuring the validity and reliability of a climatic thinking that is concerned with a unified understanding and response to climate change. Before concluding this act's first chapter we will take an introductory look at one powerful voice impacting the evolution of climatic thinking concerned with engaging Gaia's indeterminate response to the West's climatic uncertainty.

Scientific Wisdom Challenged

By consolidating interdisciplinary research, inferring probabilities and negotiating an intergovernmental consensus, the IPCC has moved from a "highly qualified and cautious" projection in its first 1990 report to the TAR's overwhelming consensus that anthropogenic climate change is occurring – the West's climatic uncertainty is real. Such a strong scientific consensus was, according to Weart, finally able to confront the objections of industry skeptics who pressured more cautious statements in earlier reports. To understand this conflict it is

helpful to recall the 1980's scientific influence on the *Montreal Protocol* for dealing with the ozone hole by regulating chlorofluorocarbons (CFCs). Weart explains that the success of scientists in securing this earlier agreement was partly because "market-oriented mechanisms could be devised to do the job cheaply - over the long run at a net savings to the global economy".[102] While this success resonated with the rational "dreams held by liberals since the nineteenth century",[103] when it came to a climate change response the issue would not be so easy. As Weart relates, industrialists and politicians opposed GHG regulations because of the perception that they would be "an insufferable economic drag".[104] More than that, not all political economic interests were happy about science taking on a social role, with skeptics utilizing the science's uncertainties as tools to discount the rising scientific consensus epitomized in the IPCC's TAR. The critical reading offered by Dotto explains that the skeptics tended to focus upon the lack of proof or "exact laws" in their attempts to delay any radical shift in the political economy.[105] This minimizing of climate science has had active advocates at the highest political levels.

In the early 1990s, the United States' Republican administration released a memorandum which "proposed that the best way to publicly deal with concern about global warming would be "to raise the many uncertainties".[106] Similar actions and policies became prevalent once again in George W. Bush's Republican administration of the early twenty-first century, even as the TAR documented a heightened scientific consensus.[107] This administration has actively worked internationally on discrediting the IPCC's TAR, while domestically it has watered down the nation's 2003 *State of the Environment* report by replacing climate change research statements with the wording of "a report commissioned by the American Petroleum Institute that came to no specific conclusion about global warming".[108] In 2004, this same government limited the scope and validity of the ACIA through its influence on drafting policy, despite it reflecting "the work of more than 300 scientists", Native peoples and all Arctic nations.[109] Political actions of this nature led the *Union of Concerned Scientists* to

release a 2004 report which found "significant evidence that the scope and scale of the manipulation, suppression, and misrepresentation of science by the Bush administration is unprecedented".[110] The *Global Climate Coalition* is the main non-governmental organization in the United States to utilize scientific uncertainties as a means to delay response. This organization that is "funded by dozens of major corporations in the petroleum, automotive, and other industries" has utilized media campaigns and the persuasion of government leaders to hinder political economic action.[111] They delay international and national responses to climate change by making the case that it is more a human construction than a verifiable scientific phenomenon, and that findings contrary to the IPCC science are being silenced. After reviewing much of the contradictory research touted by these skeptics, Weart concludes that their findings "rarely appeared in the standard scientific publications, the peer-reviewed journals where every statement was reviewed by other scientists before publication".[112] On top of that, Weart adds that these critical voices assert that IPCC science is being directed by political interests, while actively obscuring the powerful political economic interests which influence their aim to silence this increasing scientific consensus. An evolving Gaian climate science appears to run counter to these powerful political economic interests of the United States, North America and the developed world.

While the search for objective knowledge has led scientists to reveal a climatic hierarchy that is dynamic and indeterminate in its inclusion of biological and human life, the political economic power of the United States' response mires the evolution of climatic thinking in past scientific understandings of uncertainty. Following Barbour's second and third cautions, it can be said that this extreme position necessarily limits the effectiveness of today's climatic thinking by diffusing the focus of research away from the emergent response of Gaia's climatic hierarchy and towards limited positivistic views that are integral in the maintenance of the West's climatic uncertainty. In contrast to these political economic responses that are based on incomplete science, skewing of knowledge and/or outdated scientific assumptions, today a

much broader interdisciplinary climate science is needed that can integrate humanity in a way that adequately reflects and responds to that which is knowable and unknowable in the emerging respiration of Gaia's climatic hierarchy. This is my focus in this act's next three chapters which analyze the United States and Canadian political economic responses to the West's climatic uncertainty. Through this approach, my climatic thinking may be able to meet Barbour's second caution by ensuring that the competing discourses are actively connected to varying probabilities of changing future conditions. By default the inclusion of these human dimensions may allow my climatic thinking to approach a Gaian instinct that can search for unity and thus meet Barbour's third caution.

In his book *Gaia: A New Look at Life on Earth*, Lovelock explains that Gaia is for those of us "who like to walk or simply stand and stare, to wonder about the Earth and the life it bears, and to speculate about the consequences of our own presence here" as we contemplate "an alternative to that pessimistic view which sees nature as a primitive force to be subdued and conquered".[113] In contrast to skeptics who are critical of a climate science that is no longer constrained within positivistic assumptions, this instinctual wisdom transforms the IPCC's interdisciplinarity into a climatic thinking that shares physical and social sciences with religious understanding that can attend Gaia's climatic hierarchy as it responds to the West's uncertainty. It is the dual impact of these political debates and the methodological implications of Gaia's indeterminate breath that today manifests an uncertain political economic climate for scientific wisdom.

2 Fuelling America's Climatic Apocalypse

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American way of life. The American way of life is
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a blessed one.

Ari Fleischer, White House Press Secretary 2001

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The real question is not whether oil is going to run out (it will)
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but whether we have the capacity, the political will, to see the outcome
ᑕᑯᐅᖅᑐᕈᓇᖅᓗᑕ ᐊᑐᐃᓇᐅᒪᒋᐊᕈᓇᖅᓯᓗᑕ ᑕᐃᒃᓯᔪᓐᑦ.
soon enough to prepare ourselves for it.

Paul Roberts 2004

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Denial of change is typical of all people who benefit
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emerging early states and today.

Roderick McIntosh, Joseph Tainter and Susan McIntosh 2000

In the summer of 2005 a combination of scientific consensus and international pressure forced President George W. Bush, as a joint member of the G8, to agree that "while uncertainty remains in our understanding of climate science, we know enough to act now".[1] Though the statement did not clarify the nature of those immanent actions, this admission was considered a necessary step towards re-negotiating a global response to climate change that includes the United States. Up until 2000 the successive unveilings of the IPCC had inspired a steadily moving international response, beginning with the *United Nations Framework Convention on Climate Change* signed in 1992 at the Earth Summit in Rio de Janeiro, followed by the December 11, 1997 signing of the Kyoto Protocol for global reduction of GHG emissions. When George W. Bush came into the presidential office in 2001, that movement was halted. His initial presidential comments about a climate change response stated: "We will not do anything that harms our economy, because first things first are the people who live in America". Specifically clarifying his administration's position on the reduction of fuel consumption as a climate change policy, the White House Press Secretary Ari Fleischer responded: "That's a big no. The President believes that it's an American way of life, and that it should be the goal of policymakers to protect the American way of life. The American way of life is a blessed one".[2] Since this American way of life has considerably disrupted early twenty-first century climate science, as well as domestic and international policy, it is necessary for a climatic thinking of Gaia to contemplate this national manifestation of the West's climatic uncertainty and its potential apocalyptic impact.

In his book *American Theocracy*, Kevin Phillips clarifies the fundamental Christian and fossil fuel interests which have influenced Republican policies, including those that directly

and indirectly touch upon the issue of climate change.[3] While the energy sector has an obvious financial stake in delaying any international response that entails reducing fossil fuel consumption, the Christian interests also support such delays because climate change is "supposedly irreconcilable with the Book of Genesis".[4] Offering a similar analysis, Bill Moyers writes that the energy sector's view of "the environment as ripe for the picking" and the fundamental Christians regard of "the environment as fuel for the fire that is coming" coalesce in "President Bush's master plan for rolling back environmental protections".[5] Though the financial conservatives from "the oil and gas, coal, and automobile industries may not believe in end times", as proposed by their Christian partners, Phillips states that "their opposition to regulatory environmental prescriptions and tougher fuel-efficiency standards" aligns them "with the economically undemanding religious right".[6] The paradox is that this somewhat uneasy Republican alliance manifests a number of impending social and environmental signs that are revelatory of the Christian fundamentalist's apocalypse. Phillips explains that any combination of the following forecasts which are projected to occur between 2010 and 2020 may trigger a national crisis: "a speculative credit bubble", ever-increasing foreign debt, a federal deficit that will further reduce social services, oil scarcities that bring about rising energy prices and a potential increase of climatic disruptions.[7] Looking over the coinciding timeframes of these projections, Phillips states he "can't remember anything like this multiplicity of reasonably serious calculations and warnings", adding that if only "one or two of the four are correct, major troubles lie ahead".[8]

What Phillips' critique of Republican policy also makes apparent is that apocalyptic thought is not solely found among Christians or other religious traditions. For many secular people, the potential coincidence of global climate changes with energy shortages and other national failures suggest a uniquely rationalized apocalyptic vision. Over the past few decades even scientists, the epitome of rationality, have become alarmed by the potential impact of fossil fuel production and corresponding rises in atmospheric CO_2 concentrations that trap the

heat of the Sun's rays in Gaia. Summarizing the early trends of this greenhouse effect, McNeill states that "average surface temperatures increased by 0.3° to 0.6° Celsius" over the past hundred years, with "nine of the ten hottest years" occurring since 1987.[9] While the IPCC's TAR projects the most likely scenario as the gradual continuation of rising temperatures over the next two hundred years as atmospheric CO_2 concentrations increase by two to four times the pre-Industrial levels, there are other projections that are much more abrupt and apocalyptic in feel. By bringing these secular and Christian revelations into dialogue, this chapter will clarify an apocalyptic understanding of a Bush way that is politically unresponsive to Gaia's changing climatic hierarchy. This climatic thinking of American apocalypse begins with those political economic and religious interests that are influencing Republican climate change policy.

Climate Politics of an American Way

When President Bush walked away from the Kyoto Protocol, the polls in the United States indicated that while many thought "it would be good to do something about global warming", the response should also not entail "changing anything very much".[10] The administration's 2003 budget reflected this popular opinion with "billions in subsidies for oil, gas, coal and nuclear energy", and a reduction of research on alternative energy.[11] Its 2005 Energy Bill continued this trend by sidelining climate change language and issues of energy efficiency while providing more tax breaks and subsidies for the energy sector to increase exploration and production. These policies reflect the extent to which this administration has engaged climate change, for the dominant concerns have been subsidies for increasing fossil fuel production and exploration, energy security and outlining flaws in the climate science. That was the case until July 2005 when at the G8 Summit in Scotland President Bush agreed that human activities are linked to climate change. Later that month he also signed the Asian-Pacific climate agreement between the United States, Australia, China, India, South Korea and

Japan. This alternative to Kyoto requires no reductions in emissions, as it focuses upon the development of clean energy technologies.[12] These political actions symbolize the power of a fossil fuel tradition that has been at the core of American prosperity and ways of living throughout the twentieth and early-twenty first centuries.

During the twentieth century's opening decades the United States became the first country to shift from coal to oil as a national energy strategy. This development coincided with the factorization of a combustion engine which today has proliferated into more than half a billion cars.[13] At the turn of the century, people who once had a choice "between coal, oil, and even wood for their transportation fuel" were forced by the market to use an internal combustion engine that ran solely on oil-based fuel.[14] The global success of this way of life over the past century has brought great wealth to the United States and facilitated the nation's evolution into a global superpower. Today, the basis of this political economic power is confronted by scientific evidence that correlates climate change with the jump of oil production from 20 to 3000 million metric tons of production since 1900.[15] The political economic response of this national tradition has understandably been defensive. Though the period between 1990 and 2002 saw the oil, gas and transportation sectors contribute $415 million to Republican and Democrat politicians, Phillips points out that this influence is "inadequately expressed by raw dollar tabulations".[16] The almost unbeatable "political, lobbying, and regulatory infrastructure" of these joint interests have resulted in successive Washington showdowns that has seen "oil keep its tax breaks, coal-fired plants exempted from clean-air legislation" and the auto industry benefit from weakened "fuel-efficiency standards".[17] While these initiatives have transcended party politics, Austin and Phoenix make the case that Bush's Republican administration is so deeply enmeshed with the energy sector that it is difficult to clearly delineate where one ends and the other begins.[18] One effect of this situation has been energy policy which maintains, in the words of Roberts, "an obsolete fiction... that this country can keep ignoring fundamental weaknesses in the existing energy

order, downplay the need to reduce demand for hydrocarbons, and simply drill its way to greater energy security".[19] Climate change is merely the latest fight for the political economic protectors of this fossil fuel tradition, with a President from oil rich Texas heading the twenty-first century charge.

The administration's original response that GHGs would not be curtailed because it conflicts with the blessed American way was directed at a population that is deeply attached to their automotive tradition, and equally uncertain about climate change. In the earliest public surveys of the 1980s, just a small fraction of the one third who were aware of the subject recognized "that the risk of climate change was mainly due to carbon dioxide from fossil fuels".[20] By the end of the century, surveys found that half the public felt that global warming was occurring, though it was rarely discussed and knowledge was generally "inaccurate or out-of-date".[21] The public connected aerosol sprays and other environmental issues as direct causes, while still having difficulties connecting climate change to their everyday use of fossil fuels.[22] Some viewed the role of pollution and deforestation in climate change as a function of human greed and corruption, a moral decline that had become irreversible because of the need for so many people and cultures to be involved in the changes. When it came to the question of action, respondents were largely apathetic and held two general views: an eventual technical fix would be discovered requiring no fundamental social change; or, an apocalyptic collapse of society would right the moral decline.[23] Though these views seem to represent the diverging beliefs of progressive liberals and Christian conservatives, it should be noted that they also hold in common a certain passiveness in their response to these changes.

The Christian moral interpretation of climate change began to find its political home in the Republican Party starting in the 1970s.[24] By the 1980s and early 1990s, the gradually transforming conservativism of the Republican Party began to heighten its attack on humanists and intellectuals for controlling government bureaucracy, the courts, education and the mass media without any accountability to the public - a critique held in common with an

increasingly popular Christian base.[25] With George W. Bush's presidential election, a Republican administration began to openly display its alignment "with the Christian Right" by appointing fundamentalist activists to domestic government posts and international "delegations at the UN".[26] The first term House Majority Leader was Tom DeLay, an influential fundamentalist who could use his powerful position to state: "Only Christianity offers a way to live in response to the realities that we find in this world - only Christianity".[27] Moyers notes that prior to the 2004 election Christian fundamentalists backed 231 legislators and gave 80 to 100 percent approval ratings to 45 senators and 186 members of Congress.[28] The Republican government provided a fertile environment for an alliance with the fossil fuel sector that would give fundamentalists power to influence policy and expand their critique of liberal "socialism, feminism, and environmentalism".[29]

In his international research on the contemporary rise of fundamentalism, Antoun argues that Christian, Islamic and Judaic fundamentalisms have a similar worldview and ethos even while their historical circumstances and interpretive content differ.[30] Their common view is centered upon a literalist scriptural analysis of good and evil in relation to current social concerns, while their ethos refines that perspective into "protest and outrage at the progressive displacement of religion from one institution after another".[31] Because of this worldview and ethos, fundamentalist leaders tend to be uncompromising, believing in the divine authority of their actions, politically active in bringing about change and prepared to utilize technology and social organizations that are consistent with propagating their vision.[32] For Christian fundamentalists, the Republican Party and its fossil fuel interests would prove adequate for putting the liberal humanists and environmentalists in their place. This evolving critique of Christian fundamentalists is epitomized in Televangelist Pat Robertson's 1991 bestselling book, *New World Order*, in which environmentalists are described as evil priests of a pagan religion serving a godless liberal order.[33] Looking at the state of a world ordered by liberal humanist ideals, he asks: "How can there be peace when drunkards, drug dealers, communists,

atheists, New Age worshippers of Satan, secular humanists, oppressive dictators, greedy moneychangers, revolutionary assassins, adulterers, and homosexuals are on top?"[34] Robertson asserts that good God-fearing Christians need to be more actively involved in the political preparation of the world for God's revelation. In accordance with this mission, Buss and Herman finds that Christian fundamentalists have increased their critiques of UN sponsored environmental events, like the 1997 Kyoto Protocol meetings, as espousing anti-American and anti-Christian ideologies.[35] These events are viewed as promoting a political global order that worships the planet based on the findings of "pseudoscience".[36] In response to this godless environmentalism, these Christian interests have expanded into an international activism that utilizes both non-governmental forums as well as political channels within the Bush government to manifest their "vision of social order".[37] The fundamentalist dislike of secular humanists and environmentalists resonates with the energy sector's financial interests, and together they come to inform the Republican Party's denial of climate change science.

With the evolution of the Enlightenment, rational science and the mechanization of technology, liberal humanists believed that society would become increasingly secular and rationalized. Proponents of this centuries-old secular tradition believed that the "gloomy shadows of religion" would be permanently cast aside by the worldly illumination of reason's "brilliant light".[38] In contrast to this assumed progression, the early twenty-first century is marked by the influence of religion on United States and international politics. One American scholar of religion states that the assumption of most social scientists that "religion is moribund is being dismantled before our eyes".[39] A broad international analysis of religion and globalization led Antoun to conclude that at this point in the twenty-first century "fundamentalism is flourishing".[40] Buss and Herman add that the increasing global power of religious fundamentalisms means that there is a need to "reject the idea that an emerging international civil society is inherently democratic and progressive".[41] One symbolic figurehead of this global shift in liberal expectations is President George W. Bush.

Through an analysis of the President's autobiography, *A Charge to Keep*, as well as speeches and social and environmental policies, Peter Singer uncovers a man whose Christian conversion and faith allowed him to ascend to political economic power based upon, in Bush's own words, "a foundation that will not shift".[42] This research led Singer to state that "beyond his own beliefs" which interweave fundamental Christianity with close ties to the energy sector, the Bush administration appears to "lack any clear and consistent philosophical underpinning".[43] Both Moyers and Singer have also found the President to use metaphoric language that alludes to an apocalyptic rhetoric in public addresses. Singer focuses upon the President's references to good and evil which were used in 30 percent of all speeches up until mid-2003, with the term evil most often referring to "a *thing*, or a force, something that has a real existence" rather than "an adjective to describe what people do".[44] Though Moyers clarifies he has "no idea what President Bush thinks of the fundamentalists' fantastical theology", he does find their influence to be reflected in a language that is suffused "with images and metaphors they appreciate".[45] This language exemplifies a public rhetoric that resonates with Christian apocalypse being taught in the context of today's significant global social conflicts and environmental disruptions. As Phillips points out, starting with September 11, 2001, Christian fundamentalists had a vivid image for furthering the spread of an apocalyptic vision that is "the ground of fundamental being".[46] Interestingly, Phillips also points out that fundamentalism has tended to historically arise during perceived times of crises.[47] In light of the current social and environmental situation, it may prove helpful for my climatic thinking to engage American Christian apocalyptic beliefs.

A Christian Apocalypse

In 2002, a Time/CNN poll found 59 percent of Americans to "believe that the prophecies found in the Book of Revelation are going to come true".[48] Drawing from another poll which indicated that 53 percent of the population believed that Jesus' return and the

accompanying apocalypse was immanent, Singer points out that "we need to remember that tens of millions of Americans hold an apocalyptic view of the world".[49] Considering the popularity of this belief, it is not surprising that many surveyed about climate change in 1999 tended "to move the topic from global warming itself to more familiar topics, such as moral deterioration".[50] When apocalyptic beliefs "are adopted by large numbers of people", Stephen O'Leary states "they become part of a culture's reservoir of strategies or "coping mechanisms" that people use for conceptualizing and navigating their daily lives.[51] In a Christian nation, global changes in Gaia's climatic hierarchy become a significant sign for interpreting the emerging revelation of God's long prophesized apocalypse.

Apocalyptic belief stretches far beyond the current American incarnation into pre-Christian religious traditions from the Middle East and Egypt,[52] and also holds cosmological court with many other unique cultural guises the world over.[53] Drawing upon the anthropological research of Malinowski which found that magical beliefs are expressed more frequently in situations of anxiety and uncertainty, Wojcik proposes that the popularity of these beliefs are based upon the common experience of disruptive situations that "motivate people to attribute causality to supernatural forces, whether in the form of magic, witchcraft, fate, or God's will".[54] Christian Europe and the United States have had long historical dances with this common experience of what appears to be coming apocalypses.[55] These histories highlight one of the apocalyptic tradition's most interesting and curious dynamics: its ability to continually re-interpret social and environmental disruptions as revealing a divine plan, despite a cultural memory which shows that the prophesized End never finally arrives.[56] To understand the historical and intercultural persistence of this American manifestation of a common belief requires illustrating some of its key features.

In his historical analysis on the evolution of apocalyptic belief, Arthur Mendel finds the rejection "of the existing world and its sinners as too corrupt for repair and their condemnation to total destruction" to be the first principle of apocalyptic theology.[57] Because human sinners

are corrupted, arguments from the other side - such as today's liberal humanists, environmentalists and scientists - are considered meaningless except as signs that the end is close. Clarifying this point, O'Leary states that "since the apocalyptic prophecy predicts that many will reject the message of salvation, arguers tend to lose their concern with convincing an audience; argument becomes a mode of ritual enactment that retraces the pattern of the divine revelation".[58] It is this anti-social manifestation of apocalyptic belief and ritualized living that makes it, in O'Leary's words, "not susceptible to negation through rational criticism" or argument.[59] Building upon this is a second principle which believes with "absolute certainty that this just retribution and accompanying world transmutation are immanent".[60] The signs of the time simultaneously reveal that people and the world are becoming increasingly evil and that the patience of God is running thin. For Christians, this worldly disruption presages Christ's return, an event which will save this existence through the defeat of Satan and his evil followers.[61] This leads to one final general principle: "this battle will be followed by the resurrection of the dead, the last judgment, and the creation of a new heaven and a new earth for God's people".[62]

There are varying fundamentalist Christian interpretations of this belief system existing in America today. While dispensationalists literally interpret an apocalyptic chronology onto the immediate future which requires little action on their part, reconstructionists promote a more active missionary role that Christianizes America and the world as part of the divine plan. One view held in common by these passive and active wings is, according to Scherer, an interpretation of environmental crises as "portents of the Rapture, when born-again Christians, living and dead, will be taken up into heaven".[63] This revelation is described by the influential fundamentalist Pastor John Hagee in the following way: "All over the earth, graves will explode as the occupants soar into heaven".[64] It needs to be made clear that he is not talking about some distant future, but an immanent reality. He states, "Mark it down, take it to heart, and comfort one another with these words. Doomsday is coming for the

earth, for the nations, and for individuals, but those who have trusted in Jesus will not be present on earth to witness the dire time of tribulation".[65] Meanwhile, Pat Robertson provides advice to followers on how to act when these changes become apparent:

> We are not to weep as the people of the world weep when there are certain tragedies of breakups of the government or the systems of the world. We are not to wring our hands and say, 'Isn't that awful?' That isn't awful at all. It's good. That is a token, an evident token of our salvation, of where God is going to take us.[66]

By focusing on a recent American crisis that interconnects with climate change and oil interests, it is possible to observe how this Christian apocalyptic belief today manifests its climatic voice publicly.

On August 29, 2005 Hurricane Katrina unleashed a force upon New Orleans, Louisiana. As each successive day revealed unprecedented damage and social dislocation, many voices came forward to offer interpretations of why this happened. Amidst scientific and policy arguments about inadequate levees, a city built below sea level and climate change projections of more powerful and frequent extreme events like hurricanes, arose Robertson's apocalyptic interpretation of this sign. While broadcasting *The 700 Club* on September 4, he offered the following analysis:

> By choosing an avowed lesbian for this national event [the Emmy Awards], these Hollywood elites have clearly invited God's wrath… Is it any surprise that the Almighty chose to strike at Miss Degeneres' hometown?[67]

After Dateline Hollywood misinterpreted his theological position, Robertson wrote a letter on September 18 that made his position absolutely clear:

> As I have stated repeatedly on 'The 700 Club', Hurricane Katrina occurred because New Orleans is the epicenter of sinful jazz music in America. As for Ellen "Degenerate," I have predicted she will meet her fate when the Good Lord creates an earthquake centralized directly below the studio where she tapes her talk show.[68]

Offering a similar fundamentalist interpretation was Repent America's report that "Hurricane Katrina has put an end to the annual celebration of sin" by "drunken homosexuals engaging in sex acts in the public streets and bars" of the French Quarter.[69] Its director, Michael Marcavage, asked that "this act of God cause us all to think about what we tolerate in our city limits, and bring us trembling before the throne of Almighty God".[70] The important point is that these fundamentalist Christians interpret a climatic disruption like Hurricane Katrina as not being fuelled by the GHG emissions of fossil fuels, but by God's disapproval of a sinful world.

From this extreme Christian view, scientific models of the climatic hierarchy are to be rejected because they are based upon an Earth that is millions of years older than the 6,000 year limit suggested in the literalist history of the Bible's *Genesis*. The social disruption of the West's climatic uncertainty, wars and energy shortages are divine moral responses to the liberal order's ungodly homosexuality, humanism and environmentalism. This belief "offers privileged explanations that", in Wojcik's words, "unveil the otherwise obscure meanings behind events and experiences, reassuring believers that current crises and social evils are part of a predetermined endtimes scenario orchestrated by God".[71] In bringing a divine certainty to an uncertain experience, Wojcik critically adds it "frees one from personal uneasiness and responsibility concerning catastrophes occurring throughout the world because anything that takes place is part of a divine design".[72] Contrasting the inaccessible climate science and the secular philosophies, this Biblical knowledge can bring a sense of certainty that is understandable to "everyone, not only the ecclesiastical elite".[73] O'Leary states that the "mythic narratives and canonical scriptures" coupled with easily accessible interpretations offer a social knowledge for understanding and participating in the world's problems as reflective of an underlying spiritual reality.[74] Through weekly Christian teachings from pulpit and television, signs of the West's climatic uncertainty are interpreted as manifest Biblical signs of an emerging apocalypse. These accessible Christian teachings provide some insight

into why surveys find significant portions of the public to be relatively unknowledgeable about the science of climate change while also predisposed towards moral interpretations.

In a critical analysis of the popular hold that Christian fundamentalists, like Robertson, have on the religious imagination, Bill McKibben argues that this extreme theology is largely un-Christian.[75] He bases his proposition upon a number of surveys that reveal just "40 percent of Americans can name more than four of the Ten Commandments", "a scant half can cite any of the four authors of the Gospels" and seventy-five percent "believe the Bible teaches that "God helps those who help themselves".[76] This Christian ignorance of Biblical knowledge allows many to believe that the "uber-American idea" of economic self-interest, "at the core of our current individualist politics and culture", is Christian when it was actually "uttered by Ben Franklin".[77] McKibben further proposes that much of the American public has "replaced the Christianity of the Bible, with its call for deep sharing and personal sacrifice, with a competing creed".[78] Meanwhile, the powerful public appeal of this Christianity is based upon its promotion of a theology that "coincides with what we want to believe", that the sinful behavior of others is to blame.[79] Concluding his analysis of this state of denial that maintains a theology of economic self-interest, McKibben states that in a world where people "hunger for selfless love and are fed only love of self, they will remain hungry, and too often hungry people just come back for more of the same".[80] The implication is that these apocalyptic beliefs uphold a "foundation that will not shift" by not only denying liberal science, humanism and environmentalism, but also by marginalizing discordant messages found in the Bible itself. More important to this climatic thinking, this creed of economic self-interest is politically globalized through the Christian fundamentalist's Republican alliance with the powerful fossil fuel sector.

While the anti-environmentalism of Pat Robertson and fundamental Christians is partially based on a "simplistic notion that private property is sacred", Robert F. Kennedy and John Cronin point out that other Christians uphold a "more nuanced view that private property

is sacred only so long as it serves the community".[81] With regards to protecting the environment, these authors hold that "every mainstream religion, including Christianity, recognizes that men and women may love nature and care for the Earth without making it the object of devotion".[82] Supporting this view is the *National Association of Evangelicals'* affirmation that, though Christians "worship only the Creator and not the creation", this does not negate a Christian "principle of sustainability" which states "our uses of the Earth must be designed to conserve and renew the Earth rather than to deplete or destroy it".[83] This other American Christian view began promoting responses to climate change in 2002 with the "What would Jesus Drive" campaign. Organized by the *Evangelical Environment Network*, "its message was that our transportation choices are moral choices for three basic reasons: impacts of transportation pollution on human health, particularly that of children; the problem of global warming and its impacts on the poor; and the consequences of our oil dependence on national and economic security".[84] In addition to this moral campaign are the 86 Evangelical signatories of the 2006 *Statement of the Evangelical Climate Initiative.* These Evangelicals assert that because the scientific evidence of climate change increasingly reveals its human-induced nature, we "now believe that the evidence demands action".[85] Contrasting a *Genesis*-based denial of climate science, these Evangelicals offer a number of Biblical arguments supporting a more interactive dialogue with scientists and a call for action. Most significantly, climate change provides them with the latest evidence of humanity's "failure to exercise proper stewardship", and rather than fostering a passive stance the Statement draws from *Genesis* to recognize this situation "constitutes a critical opportunity for us to do better" (Gen. 1:26-28).[86] More Biblical support for action comes from the concordance between evidence which suggests the poor will be hit hardest and the Biblical injunction "to protect and care for the least of these as though each was Jesus Christ himself" (Mt. 22:34-40; Mt. 7:12; Mt. 25:31-46); and that "Christians must care about climate change" as stewards because "any damage that we do to God's world is an offense against God Himself" (Gen. 1; Ps. 24; Col.

1:16).[87] The Statement goes on to support a number of actions that people can undertake. These include praying to God for awareness, studying "the Bible in light of the impacts global warming will have on people and God's other creatures", organizing "your life so that it is easier and more desirable to walk, bike, car pool and use public transportation", purchasing "the most fuel efficient and least polluting vehicle", keeping "your car's engine tuned up", becoming more reliant on renewable energy, contacting your government officials, writing "a letter to the editor of the local paper" and encouraging your business or place of work to promote fuel-efficient practices.[88] While these Evangelicals may have Biblical support, their activism does not accord as well as the fundamentalist Christians' passive acceptance of the End with the fossil fuel interests at the centre of Bush's Republican administration.

In an environmental critique of the political economic and popular power that fundamentalist Christians like Robertson and Hagee now hold in America, Scherer argues that these Christian interests make it difficult to respond to environmental issues since everything "from the conservation of endangered species to the curbing of climate change, requires belief in and commitment to an enduring earth". In contrast to the scientific knowledge and economic policy that is required to live with an "enduring earth", he holds that fundamental beliefs hold environmental science and international policy as suspect because it "contradicts the End-Timer's interpretation of Holy Writ".[89] Raising a similar concern, Moyers states that "We are witnessing today a coupling of ideology and theology that threatens our ability to meet the growing ecological crisis". Concluding his analysis, Scherer muses that "with the speed of climate change now seen as moving much faster, global warming could very well be a major factor" in fulfilling these apocalyptic prophecies.[90] To understand this self-fulfilling dynamic it is helpful to consider models of a secular climatic apocalypse before contemplating what Bush's cherished way of life offers to my climatic thinking of Gaia.

Secular Apocalypse

In 2003, a controversial Pentagon briefing on the potential impacts of climate change received world-wide media attention. Rather than projecting a gradual warming, as is the most likely scenario projected by the IPCC, Schwartz and Randall use paleoclimate research to justify an alternative climatic model with an apocalyptic feel based in a non-Christian view of history that extends far beyond *Genesis*.[91] Drawing upon scientific knowledge of pre-Biblical ecological relations, such as those between Gaia's orbits, atmospheric CO_2 fluctuations, ocean circulation and glacial oscillations, this model projects that until 2010 warming will seem like an "economic nuisance, generally affecting local areas as storms, droughts and hot spells impacting agriculture and other climate-dependent activities".[92] After 2010, the North Atlantic Ocean's thermohaline circulation (THC) begins to reverse because of the influx of freshwater from melting Arctic glaciers due to rising temperatures in the polar region. This dynamic is projected to correlate with "an immediate shift in the weather in Northern Europe and eastern North America".[93] The result is a significant cooling of northern regions that is also marked by drops in rainfall, droughts and agricultural scarcities. "Annual average temperatures drop by up to 5 degrees Fahrenheit over Asia and North America and 6 degrees Fahrenheit in Northern Europe", while other areas of the world warm up by as much as 2 to 3°C.[94] During the first five years of this THC reorganization, "the effects are far more pronounced in Northern Europe", but after 2015 the chill becomes harsher for southern Europe and much of North America. Adding concern is the projected global impacts of increasing social instability and violent conflict as regional groups conflict over "energy, food and water rather than... over ideology, religion, or national honor".[95] The projected security picture for the United States is one of a nation that increasingly turns "inward, committing its resources to feeding its own population, shoring-up its borders, and managing the increasing global tension".[96] This twenty-first century projection of the human impacts related to changes in the climatic hierarchy is simply one model of what a secular apocalypse looks like.

In Schwartz and Randall's vision of social conflict, one of the identified mitigating factors is a demand for oil that is projected to increase by 66 percent over the next three decades, with little indication of where that supply is going to be produced.[97] The research of Jared Diamond indicates that while oil and gas will be accessible for a few more decades, these reserves will increasingly "be deeper underground, dirtier, increasingly expensive to extract or process".[98] Just as with the climate change science in general and the THC projections specifically, there are both proponents and skeptics of these "peak oil" projections. Those who are pessimistic about the future availability of oil base their negative projections upon "realistic forecasts of future oil discoveries" coupled with a recognition of accessibility issues.[99] This leads them to project that the remaining oil is at about a trillion barrels, placing "the peak at around 2010".[100] While more optimistic projections push the peak's timeframe back, Roberts states that the problem here is that "the peak would actually be a plateau, with the cliff pushed out till, say, 2016" and the end still relatively "immanent, given the size and value of the oil-based infrastructure - the tankers, the pipelines, the refineries, 747s, Greyhound buses, and, above all, cars - that would need to be upgraded or replaced outright".[101] This is not simply academic musings, for Kennedy finds that the energy policy which came out of Vice President Dick Cheney's *National Energy Policy Development Group*, and offered "billions in corporate subsidies" to the energy sector while reducing "health and environmental safeguards", was ultimately built upon the fear of "facing catastrophic energy shortages".[102] This common concern reveals "the real question", which according to Roberts "is not whether oil is going to run out (it will) but whether we have the capacity, the political will, to *see* the outcome soon enough to prepare ourselves for it".[103] In his view, every delay in dealing with this reality just makes the eventual end of this system more costly and difficult, leaving increasingly less space to negotiate issues of sustainability or equity.

A leading environmental view on the security dimensions of projections like peak oil is provided by Thomas Homer-Dixon's theory that environmental issues will increase

scarcities, regional conflicts and greater global instability.[104] Homer-Dixon identifies three forms of environmental scarcities: supply-induced, demand-induced and structural. Supply-induced scarcities refer to drops in the availability of resources due to environmental degradation, such as the "impact of global warming on food production".[105] With decreasing regional supplies there will be more competition for the world's resources, resulting in demand-induced scarcities. Finally, he identifies structural scarcities that are related to the unequal access of the world's various regions, countries and groups to resources which are needed not only for sustainability, but for survival. The twenty-first century global prevalence and dependence of humanity on fossil fuels for energy further raises concerns about the potential social impact of reductions, even though this is necessary for dealing with climate change. Coupled with the projected supply and demand scarcities of peak oil are the structural issues of who will have access to these dwindling energy resources. Homer-Dixon suggests that the combination of rising environmental scarcities and a global order that "is becoming ever-more unequal" could likely result in more violence and terrorism "directed against the perceived winners of the global economic race".[106] This violence will add significant security and ancillary costs for maintaining an American fossil fuel tradition that already thrives upon government subsidies, deregulation, yearly costs of $380 billion on road transportation,[107] approximately $200 billion on environmental costs that do not include the difficult to estimate climate changes,[108] and "vast amounts of money that America, Europe, and other oil importers currently spend on energy security - mainly in the form of a military presence in the Middle East".[109]

Phillips similarly refers to the potentially difficult security situation that energy scarcities may bring to the United States if the theoretical proponents of peak oil are correct, but he adds that this situation will become even more difficult if it is combined with other issues like national debt and climate change. To consider this situation, Phillips draws upon the recent historical lessons in the decline of the British Empire at the turn of the twentieth century and

Dutch power as the eighteenth century unfolded. These histories suggest that the coal-based energy infrastructure of the former and the wind-based energy infrastructure of the latter "eventually became economic obstacle courses and inertia-bound burdens" following their initial period of success.[110] In these examples, the rise and decline of national political economic fortunes were intertwined to more productive energy possibilities that became available as wind gave way to coal in the nineteenth century, and coal gave way to oil in America's twentieth century. Today's unique reality is that there is as of yet no energy source that is productively eclipsing fossil fuels. Rather, the challenge appears to be coming in the form of Homer-Dixon's environmental scarcities and climate change's potential disruptions. Despite these historical differences, Phillips consolidates his research on the Dutch, British and American examples into five common symptoms which he finds to be reflective of critical national decline:

> One symptom is widespread public concern over cultural and economic decay, with its corollaries. The second is a growing religious fervor... Next comes a rising commitment to faith as opposed to reason and a corollary downplaying of science. Fourth, we often find a considerable popular anticipation of a millennial time frame: an epochal battle... Last, empires are prone to a hubris-driven national strategic and military overreach... missions that the nation can no longer afford, economically or politically.[111]

Overstretched, rising costs, certain of national supremacy, mired in an outdated political economic infrastructure and concerned about the moral signs of apocalypse, these are some indicators of today's secular apocalypse in Bush's United States.

In the scarce world of Schwartz and Randall's abrupt climate model, it is proposed that all the progress that has occurred since the Industrial Revolution "could collapse if carrying capacities everywhere were suddenly lowered drastically".[112] This scenario envisions humanity reverting to a pre-Industrial "norm of constant battles for diminishing resources",[113] and it is a

darkening secular vision that is not simply the stuff of security experts and academics. In an essay on liberal apocalypse, Bryant Urstadt engages an organized group of citizens in New York City who were deeply concerned about peak oil and a viable social response.[114] One of his informants outlined the evolving situation that needs to be prepared for once oil runs out:

> The economy will begin an endless contraction, a prelude to the "grid crash." Cars will revert to being a luxury item, isolating the suburban millions from food and goods. Industrial agriculture will wither… In response to all of this, extreme political movements will form, and the world will devolve into a fight to control the last of the resources… Man, if he survives, will do so in agrarian villages.[115]

This frightening vision led Urstadt to conclude that "Liberal or conservative, Americans seem born to love the apocalypse".[116] Keller has likewise speculated about this prevalence, stating that while the secular population may not believe in a Christian apocalypse "they may feel some mix of foreboding and inevitability about "the environment," enabling their own numbed complicity in the economic system that is causing the end of the world for so many Amazonian species, and threatening it for innumerable ethnic minorities".[117] These secular signs in the present are similar to those in the past that Wojcik associates with the historical and intercultural prevalence of apocalyptic beliefs.

From the historical perspectives of Joseph Tainter and Diamond, these envisioned secular apocalypses can be characterized as a collapse of society.[118] This apocalyptic change of civilizations is defined by Tainter as an "extreme response" to challenges that results in "a major, rapid loss (within two or three generations) of an established level of social, political, and economic complexity".[119] Based upon the research of many ancient civilizations, Tainter finds collapse to be an interesting problem because it "is a recurrent phenomenon, and one of history's greatest dilemmas".[120] According to Diamond, this common experience of collapse is interconnected by various themes, including population growth, adoption of unsustainable practices and environmental damages that impact society in the way of "food shortages,

starvation, wars among too many people fighting for too few resources and overthrows of governing elites by disillusioned masses".[121] He finds most of these changes to not be gradual in nature, but rather the society "declined rapidly after reaching peak numbers and power", with the quickness of the decline probably coming "as a surprise and shock to their citizens".[122] Both Tainter and Diamond highlight climate change as one of the most common factors in these past collapses.[123] The climatic hierarchy's many cyclical patterns would have had naturally occurring regional dimensions that resulted in the local climate suddenly becoming "hotter or colder, wetter or drier, or more or less variable between months or between years", any of which would have challenged a society's stability.[124] These climatic changes would not bring societal collapse on their own, but, as Tainter explains, would have been most destructive when the "perturbation came after a period of declining marginal returns to investment in complexity".[125] In other words, societal collapses related to changes in the climatic hierarchy are more likely when internal inflexibility and external conflicts due to environmental scarcities, like peak oil, are already decreasing social order.

While agreeing with much of Tainter's research, Diamond critiques him for reasoning that today's "complex societies are not likely to allow themselves to collapse through failure to manage their environmental resources".[126] The central point of past collapses is that complex societies can fail because of inadequate ecological management, despite the appearance of great social power. Based on this historical perspective, Diamond identifies four types of failure:

> First of all, a group may fail to anticipate a problem... Second, when the problem does arrive, the group may fail to perceive it. Then, after they perceive it, they may fail even to try to solve it. Finally, they may try to solve it but may not succeed.[127]

Analyzing the Bush administration's political economic climate policy, Diamond concludes that the United States is enacting the third type of failure: a failure to act despite perception. But the Republican alliance of fossil fuel interests and Christian fundamentalists suggests to

my climatic thinking that Diamond may have not properly assessed this failed response to climate change and peak oil. A Bush way that embraces a selective fundamental reading of the Bible and rejects contradictory science would appear to be exemplary of Diamond's second, not third, type of failure, for this fundamental belief makes the reality of climate change and peak oil difficult to perceive. The features of this failure are explicitly described by another researcher of societal collapse: "Denial of change is typical of all people who benefit from current conditions, including elites in both emerging early states and today".[128] America's fossil fuel elites can politically maintain this belief in the face of extensive contradictory evidence because of the willing compliance of a populace that is dependent upon this energy source. As Roberts points out, there is a reason why the public is not overly concerned "that the White House has steadily refused to disclose the names of the energy companies that helped write U.S. energy policy", that "the White House Energy Task Force was studying maps of Iraqi oil fields and pipelines as early as March 2000", or "that the vice president's former oil company, Halliburton, won a multibillion-dollar U.S. government contract to repair Iraqi oil fields" - to engage these troubling facts might force Americans "to see them as extensions of an out-of-control energy system that begins at home, in our own cars and houses".[129] From this view of collapse, the Republican denial of climate change and peak oil is related to a self-serving profit motive that utilizes public dependence on America's fossil fuel and Christian traditions to maintain an out-of-control power.

Interpreting the American apocalypse as being due to inadequate perception seems rational, but there is one more irrational possibility. If the Christian fundamentalist vision actually does inform the Bush way and is not simply a political ploy for votes, then the failure to develop adequate climate change and peak oil policy may be reflective of a darker religious vision that perceives the arising social and ecological disruptions as signs that the Second Coming of Jesus is upon us. Along this line of concern, Scherer asserts it is time to ask some difficult questions concerning the faith of this Republican administration: "Do you believe we

are in the End Time? Are the governmental policies you support based on your faith in the imminent Second Coming?"[130] These questions are important for Scherer because he views this faith as having a spiritual energy that could use climate change as fuel for self-fulfilling a Christian apocalypse. Adding the dimension of apocalyptic scholarship to Scherer's critical insight, O'Leary asks "whether the tragic apocalypse might be a self-fulfilling prophecy; whether the logic of a purely historicist eschatology may not, in the end, contribute to the realization of the End it predicts".[131] Similarly, Keller remarks that she has wondered "whether Western civilization has been acting out a self-fulfilling prophecy".[132] If the people of the United States cannot get a hold of this self-fulfilling apocalypse that is signified by Bush's way, then the American Dream will eventually become a dark nightmare not only for Americans, but for all who are within the global scale of this political economic power that significantly fuels Gaia's climatic response to the West's uncertainty.

Though Diamond's first category of failing to anticipate the problem offers a better accounting of this global apocalypse, its fit with this Christian belief is not completely adequate since fundamentalists do not view the apocalypse as a problem or a failure. As Pat Robertson states, when these changes occur "we are not too weep", for the suffering is "an evident token of our salvation". The lack of this religious consideration in Diamond's assessment is reflective of a gap in liberal, humanist, scientific and environmental interpretations of today's signs, and it is a problem that is as serious as the selective Biblical reading offered by some fundamentalist Christians. Only when this gap is addressed will America be able to take advantage of Tainter's conclusion that research on societal collapse offers the world today "the opportunity to become the first society in history to recognize the processes by which problem-solving abilities decline and to devise corrective actions".[133] In the contemporary context of a climatic apocalypse fuelled by the consumptive lead-up to peak oil, such a successful response will need to contemplate a balance between secular and religious views of climatic apocalypse so as to make democratically difficult decisions about

"whether to abandon some of one's core values" which have become "incompatible with survival".[134]

A Climatic Apocalypse

The moral imperative of such an apocalyptic re-assessment of American cultural ways is what former Democratic Vice President Al Gore refers to in the title of his 2006 climate change documentary *An Inconvenient Truth.*[135] After his defeat for the Presidential Office by George W. Bush in 2000, Gore took the opportunity to re-engage his research passion on the intersection of climate science and politics. Utilizing powerful networks in academic and classified government science relevant to climate change, Gore presents a compelling documentary on the moral imperative for fundamental cultural changes that are now called upon in the United States and the international community because of the West's climatic uncertainty. The inconvenient truth presented by Gore is that environmental changes are happening much quicker than scientists projected over the past few decades, and consequently the changes to the United States' fossil fuel dependence will need to quickly leave behind denial and embrace radical actions before it is too late. The changes he documents include using more efficient electronic appliances, increasing heating and air conditioning efficiency, increasing private and public vehicle transportation efficiency, employing more renewables and promoting CO_2 sequestration technology, all of which could relatively quickly reduce his nation's emissions below 1970 levels.[136] While these are significant cultural changes, this climatic thinking on American apocalypse suggests there is something morally missing in Gore's response. His embrace of these largely technical and policy solutions does not challenge America's religious, conservative and liberal faith in an economic self-interest that continually develops the world into an ever-growing economy. In fact, he states that choosing between the economy and the environment is a false choice because the "right thing will create wealth and jobs, because doing the right thing will move us forward".[137] It may be true that

wealth and jobs can be created through this type of response, but his liberal view paints too rosy a picture concerning the kinds of personal, social and national cuts in energy consumerism that will be required. Perhaps it is this common belief in economic self-interest held by conservative Christians and secular liberals that is being challenged by today's climatic apocalypse.

Though secular liberal views like that of Gore contrasts the Bush way by embracing physical and social climate science, on the negative side they tend to neglect critical analysis on the importance of religious beliefs such as apocalypse. Both the research of environmental theorists and anthropologists suggest that the practical influence of religion is deeply connected to a society's adaptation or maladaptation.[138] In Western discourse on Christianity, this kind of environmental analysis is largely regarded as beginning with Lynn White, Jr.'s suggestion that the ecological impact of science and technology goes beyond the Industrial Revolution into the spiritual ground of a Christian dualist theology that separates divinity and nature.[139] His research proposes that the Christian belief in the creation being manifested primarily for human benefit came to fuel a scientific and technological spirit that has a "rapacious regard for nature".[140] Though White also touches upon the impact of pagan thought on Christianity during the conversion of medieval Europe, McGrath argues that these influences are minimized in his analysis.[141] He agrees with White that unlimited scientific research and technological progress has raised the specter of environmental issues, but in contrast to a Christian genesis he asserts that the original fault for this historical trajectory lies with a host of humanist influences on Western thought that includes paganism, Greek humanism and Neo-Platonism. Even with this limitation accepted, White still proposes that any comprehensive solution to the environmental crisis will have to include religion.[142] Yet in a contemporary reality which reveals the powerful global interaction of religion, political economics, peak oil and climate change, the critical thought of secular liberals often fails to engage these religious dimensions beyond a cursory rejection based on post-Enlightenment

beliefs. Not only does the continued prevalence of religion in America call this methodology into question, but, as McGrath points out, "the rationalism of the Enlightenment has led to what seem to be irreversible changes in the atmosphere, leading to ozone depletion and global warming".[143] This potential apocalypse of national power combines with the twenty-first century continuation of a religious instinct and an emerging Gaian science to force my act of climatic thinking to contemplate the impact liberal Enlightenment beliefs are having on Gaia's climatic hierarchy.

While climate science is developing its own apocalyptic methodology for socially contextualizing indeterminate knowledge of the West's climatic uncertainty, the popularity of Christian and secular apocalypse in the United States seems to reflect the development of a public sentiment that Lasch finds to have "deep reservations about the progressive scheme of history".[144] Much of the secular apocalyptic scenarios likewise support a critical analysis of the Western liberal belief in progress as reflected in Gore's *An Inconvenient Truth* and the Kyoto Protocol's sustainable development language. By questioning this enlightened belief, this act's third chapter will open out to Gaia's climatic hierarchy in a way that actively contemplates the moral and interdisciplinary value of apocalyptic theology. In his 2003 *State of the World* essay, Gardner supports this religious approach to climatic thinking by suggesting that religious traditions provide accessible cultural interpretations which can facilitate public responses to environmental issues like climate change.[145] This evolving tradition could be the grounding for a political economic alternative to Bush's fossilized denial of science, Robertson's selective Biblical reading and the liberal marginalization of Christianity, while also providing the public with an accessible religious language for interpreting climate science in the spirit of the Statement of the Evangelical Climate Initiative.[146]

At the conclusion of his analysis, Moyers first muses that Americans do not see what they are doing to the environment, then shifts to the view that his country is largely aware that the world is being despoiled for future generations. This leads him to a number of rhetorical

questions: "Why? Is it because we do not care? Because we are greedy? Because we have lost our capacity for outrage, our ability to sustain indignation at injustice? What has happened to our moral imagination?"[147] While there are many possible responses to these questions, my climatic thinking suggests that the passive religious and secular approach to apocalyptic changes is central to this loss of moral imagination. The actions inspired by the Evangelical Statement reveal that Christianity can also guide people towards a more active spiritual way that can prepare them to engage the perpetual presence of divine signs in the world. As O'Leary explains, the prevalence "of apocalyptic signs throughout history might be interpreted as a clue that the End has been misunderstood" when thought of as "an absolute closure to temporality and history".[148] This historical recurrence, in his view, can be better understood "as a normative standard against which our actions may be measured", thus redefining "Apocalypse as essentially concerned not with temporality, but with ethics.[149] Such an apocalyptic ethic is required by climatic thinking if it is to challenge researchers and politicians, in O'Leary's words, "to face the reality of the really new, the *novum*, and the future breaking in and exploding every complacency".[150] Within today's changing climatic hierarchy, this Gaian instinct challenges research to confront secular and religious, liberal and conservative beliefs about the West's climatic uncertainty, fossil fuels, the enlightened irrelevancy of religion and the inevitability of American supremacy. Apocalypse challenges all foundations that will not shift, and thus offers my climatic thinking inspiration for following religious and secular signs in imagining a climate policy response that can fuel the way to an enduring Earth.

3 Canada's Failed Liberal Response to Kyoto

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CO_2 increased. But in their very structure, the models were designed
ᑕᒪᖅᑯᐊ ᐅᑕᑐᕿᐅᑎᑦ ᐋᖅᑭᓯᖅᑯᑕᐅᓚᐅᖅᑯᓯᒪᔪᑦ ᕋᖅᑭᐱᖅᑎᑦᑎᐅᓵᓯᐊᖅᓯᑎᖅ ᑭᓯᐊᓂ
to show only smooth changes. In the real world, when you push on
ᐊᓯᑭᖅᐸᑦᓀᐊᕐᕋᑎᐊᖅᑐᓂᖅ. ᐱᑦᓀᑕᖅᑐᑦᓀᓂ, ᐊᐅᐅᐅᖅᓯᓇᑦᓗᓂ ᓯᓇᑐᐃᓇᖅᕿᖅ
something steadily it may remain in place for a while, then
ᑕᐃᒪᖅᕋᐃᓐᓇᖅ ᓯᑦᑕᵃᵒᕈᑲᐃᓐᓇᑭᖅᑐᒍᓗᐊᖅ, ᑭᵒᒍᓂᵒᒐᓂ ᐊᐅᓀᓴᖅᑲᓀᑦᓗᑦᓂᓂ.
move with a jerk.

Spencer Weart 2003

ᑲᔪᓯᓵᓀᐊᓗᓂ ᐱᓂᐊᖅᑐᑎᓂᖅ ᑕᐃᒪᐃᔨᑎᖅᑲᖅᐳᖅ, ᑐᵃᵒᒐᕕᑦᓗᒍ,
Progressive optimism rests, at bottom, on a denial of the natural
ᖃᐅᔨᵃᵒᒍᒍᑦᑕᐃᓂᕆᑦ ᐃᒪᒥᓂᑲ ᑭᓀᖅᖃᓂᒋᑭᓂᑲ ᐃᓄᐃᑦ ᐱᔪᓐᓇᓂᒋᑦ
limits on human power and freedom, and it cannot survive for
ᐊᒪᒪ ᐃᓯᒪᖅᓯᑭᵃᓇᖅᓂᒋᑕ, ᐊᒪᒪ ᐊᵃᓇᐅᒪᔪᵃᓇᵃᒍᒋᓀᖅ ᐊᑯᓂ ᓯᓀᖅᐸᒥ
very long in a world in which an awareness of those limits has
ᑐᕼᐅᒪᓂᖅ ᑕᒪᑯᓂᒍᒐ ᑭᓀᓀᔭᐅᔪᓂᑲ ᖃᐅᒪᔪᖅᕼᐅᔪᵃᓂᖅᓯᒪᓀᖅᐸᑦ.
become inescapable.

Christopher Lasch 1991

ᐱᑕᖅᕆᔨᒐᓗᐊᖅ ᑕᐃᒪ ᓯᓀᖅᔪᐊᕆᐅᑦ
There is such a thing as a
ᖃᐅᔨᒪᖅᑎᑦᓂᵒᓂᒍᑦ.
global conscience.

Prime Minister Paul Martin, Montreal Conference 2005

In a December 7, 2005 address to the international delegates of the United Nations Framework Convention on Climate Change (UNFCCC) at the Montreal Conference, the host, Canada's Liberal Prime Minister Paul Martin, confronted President Bush's American way of responding to the West's climatic uncertainty. Martin told the delegates that "time is past to seek comfort in denial", and that it is no longer possible "to pretend that any nation can stand alone, isolated from the global community".[1] Later with the press he added that "there is such a thing as a global conscience", and it is now time to listen and join others of the international community.[2] The initial result of this rebuke was the United States' chief negotiator storming "off in a huff".[3] While Martin was suggesting that it was time for the Bush way to be brought into global negotiation, Taber and Mittelstaedt reported that Canada's "record on cutting greenhouse-gas emissions has been far shabbier than that of the United States", despite the nation's ratification of the Kyoto Protocol.[4] The UNFCCC documents Canada's emissions as increasing by 24 percent between 1990 and 2003, while over that same timeframe the United States only rose by 13 percent.[5] This story in climatic thinking is concerned with the progressive dimensions of this Liberal failure as it contrasts and parallels Bush's apocalyptic denial of the West's uncertainty.

The Montreal Conference occurring between November 28 and December 9, 2005 was concerned with planning future meetings for extending the Kyoto commitments through a new agreement that would garner more support from countries like the United States, China and Australia. With 190 nations participating and approximately 10,000 international delegates representing governments, environmental organizations, business leaders and cultural interests, this conference was the largest climate change gathering since the 1997 Kyoto

meetings. Early in his speech Martin also evoked the symbolism of Montreal as a place where the international community came together in 1987 to ban chemicals related to the ozone hole in a landmark environmental agreement known as the Montreal Protocol. He saw this recent past as an inspiring vision that could "make Montreal a name that is synonymous with the moment the world came together, and together set off down the long but vital path to progress, real progress, progress we can measure, progress we can one day celebrate".[6] In Martin's opinion the time for debating the validity of a climate science which fingers human GHG emissions as the cause is over. Whether it is from the view of energy security, economics, ecological science or ethics, the impacts of climate change made it apparent to him that "We must act, and we must act now".[7]

This North American finger pointing that came together with an adamant plea for action seems a little hypocritical coming from a leader whose nation has performed so badly in reducing its GHG emissions since the Kyoto Protocol. Research on Canada's international environmental record since the 1990s lead Anthony Perl and Eugene Lee to conclude that on "the international arena, Canada resembles a nation seeking to have its cake and eat it too".[8] They state that Canada actively pursues international "leadership in global sustainability while also actively reaping the rewards of ever-closer economic integration with the United States, a country that increasingly behaves as if global sustainability was someone else's problem".[9] The result of this untenable contradiction in Canada's North American experience has been environmental institutions that "are increasingly ineffective in meeting environmental challenges".[10] In a "comparison of twenty-five environmental indicators", Perl and Lee report that Canada's overall performance ranked "second worst among twenty-eight Organization for Economic Cooperation and Development (OECD) member nations, followed only by the United States".[11] The conclusion of these researchers is that Canada's poor environmental performance is a function of policies which sidestep a deep questioning of how North American economic ties and assumptions may be limiting a political response to the West's

climatic uncertainty. Before considering Canada's Liberal participation in a North American failure that culminates with the Montreal Conference, my climatic thinking begins with a historical review of those events that led up to and followed the Kyoto Protocol.

Canadian Costing of Kyoto

Over the past four decades of Canadian federal politics, there have only been about ten years of non-Liberal power. Consequently, Liberal environmentalism has been as central to Canada's climate change response as conservative Republicanism has been in the United States over that same period. Starting with the Liberal Prime Minister Lester Pearson in the 1960s, Canada took on an increasingly central role in the global internationalism of the United Nations. Lee and Perl explain that it was in this Liberal tradition that Canada developed a "leadership role in shaping international regimes through efforts such as the 1972 UN conference on environment in Stockholm and the Brundtland Commission" of the mid-1980s.[12] To these international successes was added the 1987 Montreal Protocol. Following this event the then Progressive Conservative government shifted Canada's policy decision-making process from scientists to "economics and politics" because, in Steven Bernstein's words, scientists "reflected too closely a concern with the environment rather than effective or pragmatic responses acceptable to government".[13] The final rounds of the December 1991 UNFCCC negotiations was the first time that Canadian "economic experts replaced senior atmospheric scientists and forestry experts".[14] This move in Canadian negotiating was in line with the international trend of utilizing neo-conservative economics to approach environmental issues.[15] When Jean Chretien returned the Liberals to government in 1993, after a nine year hiatus, there was little shift in this economic framework for responding to climate change. The Kyoto meetings are the international context for this opening glance on the decline of Canada's Liberal environmental response.

The road to Kyoto began at the 1992 Rio Earth Summit where the UNFCCC secured an agreement of leveling GHG emissions in a way that could sustain the global climate, with Canada being the eighth country to ratify the agreement. In this initial form the agreement was largely voluntary and made little progress in curbing emissions between 1992 and 1996. During the following years prior to Kyoto there were two meetings, one held in Berlin, Germany in the spring of 1995 and a second in July 1996 at Geneva, Switzerland. The IPCC's Second Assessment Report was just released in 1995, with its most widely quoted statement being that "The balance of evidence suggests that there is a discernible human influence on global climate".[16] This rising scientific consensus increased the pressure on the international community to politically respond beyond voluntary measures. The result was the 1996 Geneva Ministerial Declaration which stated that the international community recognized the IPCC science, "although the parties remained divided over the scope of the agreement".[17] These disagreements were negotiated over the year and a half that led up to the Kyoto, Japan meetings held from December 1 to 11, 1997.

In the lead-up negotiations a divide began to grow between the European Union and the then Democratic-led United States which wanted to promote less stringent emission reductions.[18] With this divide increasingly apparent at the Kyoto meetings, the Canadian Liberal government decided to play up its traditional international role as a mediator that could "help find common ground in Kyoto", and through that act reinvigorate its image "as a facilitator of global agreement and compromise".[19] Meanwhile, the Democratic Vice President Al Gore arrived on December 8 and instructed the U.S. delegation "to show increased negotiating flexibility if a comprehensive plan" could be agreed upon.[20] His message resulted in the United States' acceptance of a 7 percent reduction of GHG emissions below 1990 levels by 2010, which was higher than initially planned and amounted to a 23 percent reduction due to emission increases up to 1997.[21] Other developed countries signed on to similar agreements, with the European Union at 8 percent, and other industrialized nations at a minimum of 5.2

percent of 1990 levels. The American response surpassed Canada's commitment and pressured the Liberal government to save their international image "by agreeing to a 6 percent reduction", which amounted to a 19 percent decrease since Canadian emissions had risen by 13 percent over these seven years.[22] While America's Democratic presence in Kyoto was soon replaced by Republican conservativism, in Canada the Kyoto agreement would temporarily mask a Liberal nation's developing international tarnish.

There was general agreement at Kyoto concerning the six gases - carbon dioxide, three halocarbons, methane and nitrous oxide - that needed mandatory emission reductions, where the central problem arose was concerning issues of equity and development. Weart explains that in Kyoto it took various political efforts to negotiate the "intractable problems involving fairness and the power relations between industrialized and developing countries".[23] Beyond the Western industrialization that largely contributed to climate change, these power relations were also problematic because of the projection that the developing world would have the most to lose and "the least power to force through an agreement".[24] Clarifying the injustices of these international dynamics, David Hallman states that "while the problem is caused primarily by the high level of greenhouse gas emissions in the North, the consequences of global warming will affect the whole planet with the South suffering disproportionately".[25] The disproportionate impact of the West's climatic uncertainty is related to a number of factors, including diverse regional impacts on ecological systems, its aggravation of other environmental issues and social problems, and the technological and economic gulf that exists between developed and developing countries. With the Kyoto Protocol developed countries promised GHG reductions, while a list of developing countries, including the now controversial inclusion of China and India, agreed to maintain or increase emissions by various percentages so as to foster sustainable development. These differences represented to some extent the responsibility that developed nations felt they had for the onset of climate change.

Ever since the creation of the UNFCCC at Rio the UN General Assembly pushed for an equal representation of climate change as both an environmental and developmental issue.[26] The main objective of the UNFCCC is concerned with ensuring that the world's population as well as "future generations will live under climate conditions that permit sustainable social and economic development".[27] The interdisciplinary science of the IPCC also frames much of its social analyses within a sustainable development perspective that is concerned with economic growth and social equity.[28] Through a package of differentiated national emission objectives, coupled with clean development mechanisms and joint implementation programs that aim to share technology globally, the Kyoto Protocol attempted to continue fostering development while dealing with changes in the climatic hierarchy. Underlying these differentiated commitments and mechanisms is a basic international liberal belief that GHG emissions can be curtailed in a way that sustains the climate for future economic growth.

Before the differentiated commitments of the Kyoto Protocol could be met each signatory needed to nationally ratify the agreement. The first significant difficulty came with George W. Bush's election as the United States President in 2000, followed in 2001 by his Republican administration's formal announcement that the Kyoto Protocol would not be ratified because it conflicted with the American way. Supported by industrial corporations, energy interests and a skeptical Christian right, his administration purported that "regulation would inflict economic disaster on Americans", and warned "that the Kyoto Protocol would turn over the world economy to the unregulated developing countries".[29] Meanwhile, the other international signatories who ratified the Kyoto Protocol, including Canada, continued to meet without the United States despite it being a leading emissions producer, but with results that reduced international commitments. In 2001 at Bonn, Germany the lack of progress since 1997 led to the new agreement that GHGs would only be reduced to 1990 levels, a plan that, Weart remarks, "scarcely anyone believed would really be achieved".[30]

Beyond the thorny international issue related to differentiated emission reduction and equity, the Kyoto Protocol also concerned itself with a global climate that could sustain economic growth for future generations. This concern for the future necessitated a constant re-assessment of IPCC science in relation to international political economic policy during Kyoto's agreed upon commitment periods. While the first commitment period for meeting obligations was scheduled to occur between 2008 and 2012, Article 3.9 identified 2005 as the time to begin negotiating a second commitment period.[31] This agreement was the basis of the 2005 Montreal Conference that saw the increasing scientific evidence on the West's climatic uncertainty come together with updated analyses of national emissions since 1990 to inform a public debate on the future of international climate policy. Leading up to Montreal the UNFCCC not only reported that Canada's and the United States' emissions had increased significantly, but also that very few countries performed well based solely on the merits of good institutionalized policy.[32] Most countries that had significant reductions were from the former Soviet Union, and these reductions were related to significant economic downturns. The most significant decrease of emissions in the European Union was Germany's 18.2 percent, but again a significant portion of that was related to the inclusion of East Germany's economic recession. While the United Kingdom's 13 percent and Iceland's 8.2 percent reductions below 1990 levels were the most significant results related to the enactment of national policies aimed at energy efficiency and renewable energy technology, most Western nations had emissions hovering around or higher than those of 1990. The overall assessment in 2006 is that developed countries have "reduced emissions by 5.9 percent compared to 1990 levels".[33] In the light of some scientific projections which suggest that a 70 percent reduction of GHG emissions from 1990 levels may be required just to stabilize the climatic hierarchy,[34] it can be claimed that Canada's Liberal failure was merely enmeshed in various degrees of international languishing in the face of the IPCC's growing evidence. It was in this international and North American political economic context that Canada's Liberal

government unveiled its plan for meeting its ratified Kyoto commitments in the early years of the twenty-first century.

Many argue that Canada's high levels of energy consumption are related to it being "a world supplier of primary commodities" and a northern country of large size and small population, but even with these factors considered Canada consumes a lot of energy "when compared with other countries with similar geographic and demographic characteristics".[35] A recent report by the David Suzuki Foundation, a Canadian environmental advocacy organization, states that "Canadian and American consumption is similar", with the average Canadian consuming "the equivalent of 600,000 cubic metres of natural gas, 1,100,000 kilograms of coal, or 575,000 litres of crude oil" over their lifetime.[36] The average Canadian was also projected by the report to "travel 700,000 kilometres in motor vehicles which is equivalent to traveling around the world at the equator 17.5 times".[37] In 2004, the nation "emitted 758 million tones of greenhouse gases into the atmosphere, 34.6 percent higher than Canada's Kyoto Protocol target", with much of this rise being attributed to energy industries and the transportation sector which saw emissions increase by "41 percent and 30 percent respectively between 1990 and 2004".[38] It was this North American fossil fuel way that the Kyoto Protocol confronted in Canada, with diverse interests commenting on the wisdom of the Liberal ratification of an international agreement that was being sidelined in the United States. As McKenzie states:

> The emission 'target' agreed to by the federal environment minister at the time was criticized by activists as not going far enough. At the same time, the commitment made by the federal government was assailed as unfair by the provinces, which had not been consulted.[39]

Meanwhile, the *Canadian Association of Petroleum Producers* said they had reservations as to "how the government will reconcile the targets agreed to at Kyoto and its commitment to no punitive taxes, more jobs, and continued economic growth".[40] Jaccard, Nyboer and Sadownik

characterized this political situation as a conundrum that sets long-term and global interests against the "short-run budgetary and political impacts" needed for maintaining Liberal power.[41] These domestic pressures significantly influenced the government's plan for meeting its Kyoto obligations.

In 2000, the Liberals released the *Government of Canada Action Plan 2000 on Climate Change*. This plan extended the 1998 *Climate Change Action Fund* which responded to climate change by adding a $60 million budgetary commitment for "various energy-efficiency and renewable energy programs".[42] With regards to dealing with economic interests, the government decided it would be more pragmatic to initiate movement towards a *First National Climate Change Business Plan* through the targeting of economic sectors for emission reductions in voluntary programs.[43] Domestic economic pressures continued to confine Canada's climate change policy well into the first decade of the twenty-first century, with the Liberal government's focus epitomized by then Finance Minister Martin's comments that "dealing with climate change provides opportunities for Canadian companies to make money and that developing new technology is key".[44] After replacing Chretien as Canada's Prime Minister in 2003, Martin's government released a report in 2005 entitled *Moving Forward on Climate Change*. While considering some of the factors involved in Canada's failure to respond to its Kyoto commitments on GHG reductions, it was noted that the economy had performed "better than had been projected", especially in key emissions-related sectors of its economy, with the Gross Domestic Product growing by 43 percent rather than the forecasted 34 percent.[45] This set of events fostered a revised plan that attempted to "harness market forces" so as to transform the growth economy towards more sustainable energy consumption via a combination of emission reductions and renewable energy technology. During the Montreal Conference this idea of transforming the economy towards renewable energy received support in an editorial article written by the Provincial Premiers Gary Doer of Manitoba and Jean Charest of Quebec. Envisioning economic opportunities in "green-building

technology", hydrogen, hybrid transportation and energy efficiencies, Doer and Charest stated it is time "to innovate and encourage ideas, and build our economy in a way that brings prosperity, health and social well-being, and sustainability".[46] Martin's federal plan also projected that these initiatives would contribute "to cleaner air for Canada's cities, enhance biodiversity, help to preserve wild spaces and generally improve the quality of life for Canadians".[47] Through this climate policy, Martin's Liberal government offered Canada its next vision of a "long but vital path to progress".

Earlier in his political mandate Martin's government also released another climate change report that focused on the economics of potential impacts and adaptations.[48] After discussing some potential regional effects on forestry, fisheries, agriculture, transportation and public health care, the report defines the government's primary means for assessing and responding to these changes. It states:

> Ongoing research is motivated by the fact that a meaningful assessment of climate change costs, both market and nonmarket, will strongly influence both mitigation and adaptation decisions. Indeed, the concepts and methods of economics have been recognized as a principal means of translating scientific research on climate change into policies.[49]

Clarifying this approach that continues the late-1980s Progressive Conservative shift of environmental policy, it adds that "assessing the economic impacts of climate change involves estimating the value of direct and indirect market and nonmarket impacts, the costs of implementing adaptation options and the benefits gained as a result of the adaptation".[50] Through discriminating between these adaptation strategies and Kyoto's mitigation policies, it is possible for my climatic thinking to assess the economic assumptions that have deeply influenced how climate science has been pragmatically, and largely ineffectively, used in Liberal policy.

In contrast to the Kyoto Protocol's primary policy of mitigating climate change through national GHG emission reductions, Canada's economic approach has drawn heavily upon cost-benefit analyses that place more weight on adaptation. One of the primary arguments of this perspective is that mitigation has a limited ability to stem the negative impacts that science projects will affect humanity for a century or two, yet policies of GHG abatement will have severe short-term economic costs. Following this line of argument, McKibben and Wilcoxen find many studies which suggest that "for most developed countries" international mitigation of GHGs will provide "only small environmental benefits" while imposing "significant costs".[51] The result is that cost-benefit critiques of the Kyoto Protocol tend to conclude that adaptation can at least complement, and at best be an alternative to mitigation strategies. There are various definitions of adaptation. In ecology it refers to the way a species fits within its environment. For some social scientists the emphasis is on the individual's ability to fit into the requirements of the socio-economic system.[52] In relation to climate change, adaptation usually refers to the ability of systems to make adjustments in response to the felt perturbations of the climatic hierarchy. The IPCC defines adaptation as "changes in processes, practices, or structures to moderate or offset potential damages or to take advantage of opportunities associated with changes in climate".[53] In Liberal Canadian policy, adaptation is defined as a strategy that complements the mitigation strategy of GHG emission reductions which increase "the likelihood of successful adaptation and decreases associated costs".[54] Examples of adaptations include improved forecasting, dike and sea wall development to protect against rising oceans, emergency preparation programs, planting vegetation and trees for changing regional climates and enacting measures that hinder development in areas liable to experience extreme events. In its broadest economic terms, adaptation refers to individual, community, regional, national and international responsiveness to projected changes.

The cost-benefit analyses that promote an increasing reliance on adaptation offer a clear and pragmatic representation of the most efficient response as that which brings the highest level of economic growth. In a revised version of an early 1990 cost-benefit analysis of climate change, the environmental economist William Nordhaus proposes that any mitigation or adaptation response should be carefully weighed for costs and benefits.[55] Following this approach, he projects climate change will provide significant benefits as the atmosphere's CO_2 enrichment nurtures a flourishing of agriculture. In his words:

> We suspect that higher levels of greenhouse gases will hurt the global economy, but because of the fertilization effect of CO_2 or the attractiveness of warm climates, the greenhouse effect might on balance actually be economically advantageous.[56]

His inevitable conclusion is that while there are going to be a combination of gains and benefits to changes in the climatic hierarchy, overall there will not be "substantial net economic damages".[57] A 1995 *Economist* article also supported this argument by projecting that since the global economy will grow by over 300 percent in the next hundred years, future generations will be "much better able to bear the costs of coping with climate change".[58] In this economic logic, uncertain negative impacts are discounted into a future where descendents will be economically benefiting from a warmer climate, and thus have more resources to respond to the negatives of climate change. Consequently, present actions should primarily focus upon the benefits of adaptation as opposed to the upfront costs of Kyoto's mitigation plan.

In Timmerman's environmental study of climate change policy, he finds Nordhaus to make "bold assumptions" that minimize scientific uncertainty through various economic mechanisms such as "future discounting, unmeasured externalities, a nature with no intrinsic value, and a relatively smooth period of onset of climate change, as well as minor impacts of physical change".[59] This minimizing of climate science's uncertainties is largely based upon two assumptions: science eventually attaining more complete knowledge, and the power of

human ingenuity to overcome nature's limits. Some economists have questioned making these assumptions when there is so much uncertainty concerning the scope and impact of climate change.[60] Tol explains that if these changes are worse than expected, as projected by some of the IPCC's more extreme scenarios and various apocalyptic models, then the costs of responding could negatively impact economic growth on a continual basis as its effects grow.[61] The result would be a fragile economy that is less capable of dealing with the regional manifestation of the West's climatic uncertainty. Cost-benefit analyses, in Tol's opinion, are only effective in relation to climate change if the variance in expected scenarios is so low that possible outcomes and thus costs are finite. He concludes with the sentiment that some climate science suggests that "the uncertainty about climate change is too large to apply cost-benefit analysis".[62] The IPCC report on mitigation and adaptation similarly explains that there are normal climate variations that socio-economic systems can address, but it is with the extreme projections of climate change that adaptation as a long term approach becomes questionable.[63] Relevant uncertainties in assessing the costs and benefits of climate change adaptation are, according to this report, "extremes, their effects, the vulnerability of systems and regions, conditions that influence vulnerability", as well as "many attributes of adaptations, including their costs, implementability, consequences, and effectiveness".[64] Thinking about this issue, Stavin relates that the "uncertainties surrounding these various physical impacts are very great, and those uncertainties are compounded by imprecise estimates of respective economic consequences".[65] The problem of economically minimizing uncertainty is intertwined with the reductionism of models. As the economist Richard Nelson clarifies, "the costs to society ... could become very large, when all the potential cultural symbols and psychic gains or losses associated with transitional and other events in the economy are entered into the social-efficiency calculations".[66] Because this intractable human complexity in economic projections is also at the core of Gaia's indeterminism, assumptions concerning the definition of relevant

variables related to the West's climatic uncertainty can become too cumbersome for cost-benefit analyses.

In the Canadian political economic reality, the result of these limitations would appear to be maladaptive policies that can neither meet Kyoto commitments nor be responsive to the climatic hierarchy's potentially apocalyptic changes as they manifest globally for all countries to experience. The IPCC identifies various characteristics that can make a society maladaptive, including the overvaluation of short-term considerations in decision making, "neglect of known climatic variability, imperfect foresight, insufficient information, and over-reliance on insurance mechanisms".[67] Some of these characteristics mark cost-benefit adaptation strategies that focus upon reducing scientific uncertainties, minimizing social costs of adaptation and failing to recognize the exponential costs of climate change's impact on economic growth. It appears as though the cost-benefit response to the West's climatic uncertainty is maladaptive on both national and global political economic scales. As will be seen next, Canada's Liberal economic failure is culturally embedded in a much longer Western history than that of a cost-benefit approach that has compromised the Kyoto Protocol's mitigation strategy.

Changing Developments

In Montreal, Martin talked to some of the political difficulties between developed and developing countries that the Kyoto Protocol was meant to address:

> Many in the developing world blame developed nations for having gotten us into this. And who can disagree? Certainly not me. But we are in this together.
>
> There can be no hiding from the fact that the developing world, which is so vulnerable, will suffer most if the effects of climate change set off an even worse decline in local living conditions or a global economic slowdown. These nations do not have the luxury of a margin of error. We are in this together.[68]

Being "in this together" means for Martin that the "developed world cannot walk away from its responsibilities" to both sustain the climate and help the developing world progress their adaptive capacity. The Prime Minister concluded his musing on a global conscience by adding that he can see the lessons of irresponsibility in his own country where energy production and consumption has made "our record on combating climate change far from perfect in the 1990s".[69] Understanding these historical dimensions of responsibility to other nations moves my climatic thinking from the Liberal adaptation failure to the coinciding ineffectiveness of a global conscience that is primarily focused upon the sustainable development epitomized in the Kyoto Protocol.

Even with the recognition that abrupt or apocalyptic climate change models are flawed, a focus upon adaptation strategies is also confronted by many other cost uncertainties associated with adapting to conditions of gradual climate variations in a global economy characterized by extreme international inequities. A system's ability to adapt is partly dependent upon knowledge of vulnerabilities and access to resources. This is what the IPCC refers to as the adaptive capacity "of a system to adjust to climate change to moderate potential damages, to take advantage of opportunities, or to cope with the consequences".[70] The IPCC goes on to state that adaptive capacity is dependent upon "such factors as wealth, technology, education, information, skills, infrastructure, access to resources, and management capabilities".[71] These constraints represent significant costs if developed nations, like Canada and the United States, continue to primarily promote adaptation, for the focus upon national economic growth allows an accruing of potential impacts to developing nations, marginalized Native cultures within developed nations, future generations and other ecological beings. Extending a view on that which needs to be considered in cost analyses, Adger, Huq, Brown, Conway and Hulme explain that the effects of population growth and the reduction of biodiversity that are intertwined with climate change exemplify the vast web of ecological and social issues.[72] They ask how people in the developing world can adapt to climate change's

emerging disruptions when they are already having difficulties with subsistence, despite decades of Western development policies. The reduced adaptive capacity of many nations and communities "are already apparent in areas such as population movement and migration, in the ability to bring new agricultural land under irrigation when rainfall is threatened, or to bring about large-scale infrastructural changes to minimize the impacts of sea-level rise on coastal area".[73] A gradually changing climate will make adaptation more difficult, and abrupt changes will likely further erode this capacity. These apocalyptic disruptions may also increase social dislocation and violence, resulting in the tightening of national borders and the further reduction of migration options.[74] This developing world view on climate change opens the West's liberal market adaptations outwards to historical patterns that have continually faltered while promoting economic growth for all.

The era of international development was inaugurated on January 20, 1949 with President Truman's announcement that "scientific advances and industrial progress" would be made "available for the improvement and growth of underdeveloped areas".[75] Development replaced terms like improvement and progress which had instilled "great expectations", but "had become somewhat tainted and worn-out by both its imperial and indigenous champions".[76] By the end of the twentieth century, development also required some re-modeling due to its social and environmental record. Critical theorists who look back on the last half of this century view development as surrounded with a dark shadow due to its many failures. Gustavo Esteva critically argues that development and its practical implementation converted "participation into a manipulative trick to involve people in struggles for getting what the powerful want to impose on them".[77] Offering a similar analysis, Gilbert Rist explains that after 1949 "more than two billion inhabitants of the planet found themselves... called upon to deepen their Westernization by repudiating their own values" and being broadly re-classified as "underdeveloped".[78] A lengthier historical view on these Western developments is offered by Ellen Wood's case study of capitalism's growth during England's

Industrial Revolution.[79] With the economic growth of this era's industrial developments came national depressive conditions analogous with today's differences in the social and environmental realities of developed and developing nations. Applying what she found in England to a late-twentieth century world of social and environmental issues, Wood states that "the destructive effects of capitalism are outstripping its material gains", and "the attempt to achieve material prosperity according to capitalist principles is increasingly likely to bring with it only the negative side of the capitalist contradiction, its dispossession and destruction without its material benefits".[80] Her critical historical perspective of development finds its roots in the political economic theory of Karl Polanyi, whose idea of the double movement is particularly helpful for considering the transmutation of development and progress into Kyoto's sustainable development.[81]

Polanyi's double movement describes the historical resistance of people to being dispossessed of their substantive ways of living by a formal market economic system. Substantive economics is a term that Polanyi defines as socially situated ways of living within community and place that includes "forms of redistribution, customs of reciprocity, householding, forums of non-profit exchange".[82] The substantive economy also embedded those formal economic relations that were often tied to trade with strangers, and it was in his opinion largely these practices which gradually became disembedded with the West's evolution of a market-oriented political economic system.[83] As the formal economy expanded into those areas of life that were traditionally oriented by substantive ways, social bonds became redefined as people were transformed into labor and nature into resources and services. With the West's globalizing of this economic progress over the nineteenth and twentieth centuries people's lives increasingly became "disembedded by relations of commodities and large markets".[84] Summing up this situation, Rogers states that in "the disembedded framework of a market economy, 'man and nature... must be subject to supply and demand'".[85] Throughout this process of dispossession, Polanyi found a continued

resistance to this progressive economic internalization that he describes as a double movement.

The double movement is defined by Polanyi as the "action of two organizing principles in society, each of them setting itself specific institutional aims, having the support of definite social forces and using its own distinctive methods".[86] One is "the principle of economic liberalism" which aims to establish "a self-regulatory market" that largely relies "on the support of the trading classes" and "*laissez-faire* and free trade as its methods".[87] Responding to this liberal movement is "the principle of social protection" that aims to conserve human and natural bonds, as well as their "productive organization".[88] This responsive movement has a conservative motivation that relies upon the "support of those most immediately affected by the deleterious action of the market - primarily, but not exclusively, the working and the landed classes - and using protective legislation, restrictive associations, and other instruments of intervention as its methods".[89] Contemporary Polanyi analyses suggest that this reaction against the developments of an unfettered market economy is unplanned and steady.[90] From its very beginning the market needed to utilize governmental interference in markets despite the contradictory laissez-faire principle of governmental non-interference. In Loy's words, "non-interference was actually interference to destroy noncontractual relations between individuals and prevent their spontaneous re-formation".[91] With a similar conclusion, McQuaig states that "if we are looking for something "natural," we find it not so much in the market, but rather in the massive and constant reaction against the market".[92]

While the continuation of Third World poverty into the late-twentieth century provided space for critical reactions against development, the effects of poverty combined with the concern about environmental issues to bring about yet another transmutation in the liberal dream of progress. No longer would the concern be simply development, but a sustainable development that was meant to consider issues of social equity and environmental impacts within the context of continued economic growth. In 1987, the United Nations Commission

sponsored the Brundtland Report which defined sustainable development as global economic growth through technological management of social and environmental risks. The report presents sustainable development in the following way:

> The concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and the ability by the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth.[93]

Rist finds this view of sustainable development to be characterized by the gross contradiction of an economic growth policy that is "supposed to reduce poverty and stabilize the ecosystem", but in actuality "hardly differs at all from the policy which historically opened the gulf between rich and poor and placed the environment in danger".[94] Rather than "the survival of the ecosystem" setting "the limits of 'development'", Rist explains that Western ideas of sustainable development come to determine "the survival of societies".[95] Not surprisingly, it was not long after the Brundtland report that international and Canadian climate policy became increasingly focused upon interpretations that viewed economic "liberalization in trade and finance as consistent with, and even necessary for, international environmental protection".[96] It is into this lengthy history of liberal and conservative double movements that Prime Minister Martin entered in speaking about "being in this together".

Behind Martin's speech can be sensed the pressure of a North American manifestation of Polanyi's double movement which limits the development of a "global conscience". On one side is a Liberal international image that wants a progressive economic response to the West's climatic uncertainty, while south of the border is Canada's largest trading partner mired in a Republican conservative protection of the American way. Singer describes the Republican position on Kyoto as amounting to the United States suggesting that developing countries commit "themselves, in perpetuity, to much lower levels of greenhouse-gas production per

head of population than the rich nations".[97] Recent research that is comparable to Canadian statistics indicates that "Americans emit three times more CO_2 per person per year than Europeans and over a hundred times more than the citizens of the least developed countries".[98] Despite Singer's conclusion that there is no way in which this Republican position that turns its back on issues of equity and environmentalism "can be defended as ethical",[99] this unethical conservativism influenced Canada's climate policy through economic ties related to the *North American Free Trade Agreement* (NAFTA). As Perl and Lee explain:

> Corporate America's profound aversion to the imposition of costs associated with environmental protection, through market mechanisms or otherwise, has never been far from Canadian economic consciousness. With so much of our economy now dependent on trade with the US, American resistance to Kyoto has translated into demands from Canadian business interests to 'go slow'.[100]

Bernstein's analysis leads him to similarly suggest that the "policy effect of NAFTA may be to create pressures for harmonization with US climate change policy, which can mitigate against action out of sync with that country".[101] Responding to this disembedding of Canadian nationalism by North American economic interests is a counter-movement firmly situated within Canada's historical support of internationalism. Bernstein notes that successive Canadian governments have been "strong supporters of multilateral institutions and a rule-based international order" as a way of being buffered from "direct US influence while producing predictability in world economic and political affairs".[102] Following this traditional Canadian movement in a North American context of domestic and American interests that want the market to be unhampered is Martin's call for Bush to develop a global conscience and engage Kyoto. This is Polanyi's double movement manifesting in North America's global response to the West's climatic uncertainty. Both of these traditional Western movements are deeply enmeshed in the onset and continuation of today's climatic changes, as well as being prime suspects in each nation's limited response to Gaia's indeterminism.

In the United States, Lasch finds the Republican critique of liberal Democrats who install bureaucracies as having "no acquaintance with the rich body of historical scholarship that shows how the expansion of the public sector itself came about, in large part, in response to pressure from the corporations themselves".[103] While North American conservatives maintain this selective amnesia by limiting climate policy and denying science, Martin's Canadian Liberal view of sustainable economic growth reveals a limited long-term memory that is maintained by disconnecting the historical effects of improvement, progress, development and sustainable development. Extending this critique, Lasch states the assumption of "limitless possibilities generated by modern societies and modern production" is called into question by the evidence of environmental and social impacts already apparent in the early 1990s.[104] The often marginalized costs of progress are marked by extreme inequities on a global scale that are today coupled with the threat of apocalyptic regional changes in the climatic hierarchy. These realities challenge ideas of development with questions concerning the feasibility of sustainable economic growth and global equity when resources "hitherto imagined to be inexhaustible, are already approaching their outer limit".[105] Lasch concludes with the critique that the universal pretensions of economic growth not only "cannot be taken seriously", but are actually "deeply offensive, not only because they embody a very narrow ideal of the good life but because the material prerequisites for this particular form of the good life cannot be made universally applicable".[106] From this view, the Brundtland Report and Kyoto Protocol fail to properly account for their lack of sustainability in a world of rising population levels, dwindling resources, increasing social conflict and Gaia's indeterminism.

Of even more importance in this failure of sustainable development is the political double movements that interact to maintain an unsustainable and unethical growth economy. Canada's and North America's failed response to climate change epitomizes this process, for they are interlocked in a dialectic that Colin Hay describes as the "logic of crisis displacement".[107] For those who employ this maladaptive logic the myriad of social and

environmental crises are not a function of capitalist economic growth, "but rather political crises within capitalism".[108] In other words, rather than confronting basic political economic assumptions of growth commonly held in liberal sustainable development and conservative laissez-faire policies, the West's climatic uncertainty merely fuels national and international debates that continually displace the potential of apocalyptic crisis. Utilizing Hay's analysis in relation to his research of Canada's east coast fishery collapse, Rogers concludes that "the global ecological crisis is not an aberration, it is a direct result of the structures and processes of modern industrial capitalism".[109] North America's political economic failure to respond to changes in the climatic hierarchy confirms that "we" in the West are the dominant uncertainty, and that blaming ineffective science or finger-pointing at other political interests are merely actions in "crisis displacement" that ensure the root cause of never-ending economic growth is not addressed.

In forcing a remembering of sustainable development's historical roots, the West's climatic uncertainty calls forth a global conscience that is concerned with responding to those double movements that are the problematic combustion engine of today's changes. Based on Polanyi's thought, Rogers redefines an adequate environmental response as a project which traverses the Western separation of culture and nature that has been instituted by formal market institutions.[110] In describing this separation as the West's "dislocating trajectory", Rogers' analysis suggests that an adequate climate change response will need to entertain ways of re-embedding formal economic relations within ecological and cultural realities that can transform conceptions of sustainability beyond the limiting belief in perpetual economic growth. It may even be said that this almost religious belief in economic growth obscures a well rounded understanding of the West's climatic uncertainty as being simultaneously Gaia's indeterminate triple movement. Just as there is a Christian fundamental tradition that deepens the Republican conservative inaction with a populist religious dimension, upon closer inspection the liberal economic tradition is also grounded in Christian beliefs. This religious

possibility offers me one final dimension for contemplating Canada's failed Liberal response before moving on to the final chapter in this act of climatic thinking.

Postmillennial Triple Movement

This Canadian Liberal story suggests that the maladaptive faith in economic growth is similar to a religious belief because it is disconnected from a scientific appreciation of the climatic hierarchy's response to the West's crisis displacement. A climatic thinking of this religious faith underlying liberal economic policy can begin by considering one belief held in common by fundamental Christians, fossil fuel interests, cost-benefit analysts and sustainable development proponents: the universal validity of their own worldview. This common predilection towards universality is, according to Nelson, theologically rooted in a Christian tradition that views the world as having "only one true religion".[111] From within this Christian cosmos the diverse economic theories of Adam Smith, Karl Marx and John Maynard Keynes emerge with the common belief that "economic truths are universally valid".[112] The result is that conservative and liberal economists assume, in Nelson's words, "that the correct economic answer can and should be applied to all kinds of circumstances and societies".[113] In contrast to the premillennial apocalyptic vision of Bush's American way, Canada's Liberal sustainable development draws its Christian inspiration from a postmillennial theology that envisions itself as a global rational end that "must apply to all people in all places".[114]

The dominant twentieth century postmillennial economic theory was provided by Keynes' view that global progress was merely a few generations away. This progress was envisioned as soon bringing an "end of scarcity" that would allow for a transformation of self-interested economic behavior into something more befitting human potential.[115] The fruits of economic abundance would extinguish "the corrosive and corrupting influence of economic scarcity".[116] As Nelson explains, economic self-interest was for Keynes a temporary tool for revealing a postmillennial heaven of progress on Earth. In this vision, "the state of natural

dysfunction is the original sin" that "results from destructive forces brought into existence by material scarcity", with the necessary response being the creation of a sinless world that is "without scarcity" in its "complete material abundance".[117] With this sinless world rationally developed, formal economic self-interest could again be re-embedded within the broader substantive social order. Confonting Keynes' theology of development is today's deteriorating environment and changes in the climatic hierarchy that some project will increase environmental, social and economic scarcities.[118] Despite contradictory evidence, this faith lives on through minimizing the apocalyptic potential of Gaia's triple response to the crisis displacement of Western double movements.

Both Weart and Demeritt describe the long tentacles of this liberal faith as it manifests in an IPCC science that is largely modeled upon the climatic hierarchy changing gradually.[119] In Weart's words, climate change "models were designed to show only smooth changes", but common sense recognizes that "when you push on something steadily it may remain in place for a while, then move with a jerk".[120] It is this potential abrupt reality that much of the paleoclimate historical record reveals,[121] and though the IPCC does refer to this abrupt potential Weart finds its marginal references to be largely overlooked by politicians, economists, the media and consequently the public.[122] The interesting point is that this gradual scientific view of Gaia's indeterminate response mimics the easy progression of liberal postmillennial theology, and thus fosters a post-Christian secular belief "that climate change can be addressed by tinkering with environmental regulations without a major restructuring of intellectual economic relations".[123] Offering a critical assessment of this approach that has dominated the international political scene, Hallman states that this response to climate change is "fundamentally flawed both practically and ethically".[124] Not only do today's potentially apocalyptic changes challenge the ethics of universally applying sustainable development to all human and ecological lives, they also highlight the limitations of applying science, technology and political economics globally. Lasch's analysis succinctly defines this failure of

liberal belief, which he states rests squarely "on a denial of the natural limits on human power and freedom".[125] A similar Canadian theological critique is offered by the former Catholic Sister, Mary Jo Leddy, in her statement that liberal progress is characterized by "an admirable openness to every option - except one that calls for a common vision that compels the sacrifice of individual commitments and interests for the sake of a common commitment".[126] This is Gaia's apocalyptic challenge to the liberal and scientific faith in progress that Lasch states "cannot survive very long in a world in which an awareness of those limits has become inescapable".[127]

My climatic thinking on this postmillennial liberal faith leads to the proposition that Martin's Liberal leadership was a climatic failure due to an unquestioned belief in the capability of the market economy to develop global equity and sustain Gaia's climate. Neither the Canadian Liberal nor United States Republican movements appear to even be close to responding to Gaia's climatic triple movements. In the conclusion of his religious economic analysis, Nelson states that the current era "may well be defined by the theological answer given to the loss of faith in modern progressivism and its various offshoots".[128] The Montreal Conference offered the next step in a purely rational international answer to this climatic question. A speech by former Democratic President Bill Clinton together with the advocacy of United States cities and the agreement by Australia and China to continue talks interacted to isolate Bush's American delegation. The Economist reports that this resulted in the United States' reluctant return to the negotiating table despite Martin's comments.[129] On December 10 a compromise deal called the *Montreal Action Plan* was revealed. The plan outlines compliance rules for cases when targets are not met by signatories, agrees that developed countries need to negotiate emission reductions for a second commitment period following Kyoto, which includes China and the United States, and promotes increasing CO_2 sequestration and capture technologies. These meager steps towards a response that speaks in political economic practices will at some point also need to recognize Gaia's apocalyptic

challenge to the West's crisis displacement: it is no longer possible to believe in the universal applicability of formal economic growth.

While Montreal's international political response is significant, this story makes it apparent that my climatic thinking about Gaia's indeterminate responses to the West's climatic uncertainty needs also to consider national double movements in crisis displacement. Such a necessity was highlighted by the fact that Martin's Montreal address also occurred at the beginning of Canada's national election. In his address, the incumbent Prime Minister used the falling popularity of United States Republican policies as a tactic to gain support by suggesting an association with the Conservative opposition. This strategy marked the first few weeks of the Liberal campaign, and it did not prove to be as effective as planned. By the end of January 2006 the Liberal political reign of twelve years ended, and the Conservative supporters of an unfettered market came to power. Canada's domestic politics had moved itself closer to powerful American fossil fuel interests, and many suspected that the nation's climate change policy would be marginalized despite Montreal's limited success. This recent Canadian movement is the point of entry into this act's final story on a climatic thinking that is responds to the Christian belief ecology which intertwines conservative and liberal sides of the West's doubly moving displacement of apocalypse.

4 Canada's Sharing in a Western Original Scarcity

ᐊᒥᖅᑲᖅᓂᖅ ᐱᖓᓱᓐᓇᖏᑦᑐᑦ ᐱᑕᑭᑦᓂᓀᒋᐊᓐᖓᑎᑎᓂᕐᒪᖓᓐᓂᖅ

ᐃᓕᒋᔭᐅᑦᓗᐊᖅᓴᖅ ᑕᒪᑐᒧᖓ ᐃᓱᒪᒋᔭᖅᑭᓱᒧᑦ ᐃᑦᐱᓐᓂᐊᒋᔭᖅᑲᖅᓂᖅ
Fundamental to this attitude is the feeling that humans
ᐃᓄᐃᑦ ᐱᓕᓐᓇᐅᑎᖅᓀᐊᖅᑲᖓᓐᓂᕐᓂᖅ ᐊᒻᒪ ᐊᑦᓚᑦ ᐃᑭᖅᑲᑭᓐᓇᓀᐊᖅᓂᖓᓐᓂᕐᓂᖅ
have the right and even the obligation to intrude upon the natural
ᐊᐸᑎᒧᑦ ᑕᐃᒪᑎᒋᐊᓗᒃ ᐱᓕᓐᓇᖅᑕᒥᓂᖅ. ᐃᓄᒃ ᖃᒧᑐᐃᓐᓇᓕᑭᓐᓇᖅᑐᖅ
world as extensively as they are able. A person can only marvel
ᓱᓇᑐᐃᓐᓇᕐᓂᖅ ᖃᐅᔨᓴᖅᑎᑦ ᐅᖃᐅᓱᖅᓯᐅᕐᖅᓱᒪᓕᕆᓐᓂᐊᓂᖓᓐᓂᖅ ᐅᐸᓴᓗᓂᑦ
that scientists generally seem never to have reflected on or
ᓇᓗᓇᐃᖅᓱᓯᐅᖅᓱᒪᓕᕆᓐᓂᐊᓂᖓᓐᓂᖅ ᓄᓇᓕᒻᓄᑦ ᓱᒪᒪᑦ ᐅᖅᓱᐊᓗᒃᓴᖅ
explained to the community why the petroleum is buried in the
ᐃᑭᐊᖏᓂᓱᐊᔪᑦᑕᖏᖓᑦ ᓄᓇᐅᑦ.
Earth in the first place.

Thomas Berry 1999

ᑕᒪᓂᑐᐃᓐᓇᐅᑎᔪᑦ ᑭᐅᑐ ᖃᑕᐃᐊᔨᑎᑐᑦ ᑕᐃᒪᐃᓕᓗᐊᖅᓱᑕ ᔪᑎᐅᓪ
We are all here in Kyoto as brothers and sisters equal before God
ᓴᖏᓂ ᐃᓗᐊᓂ ᐱᑎᐊᖅᓂᐅᓪ - ᐱᑎᐊᖅᓂᖅ ᑕᒪᑦᑕ ᖃᓄᐃᔨᑎᖃᐃᖏᐊᖅᓯᐅᑦ
within the community of creation – a creation which we all want
ᐊᒻᒪ ᐊᐃᓕᐅᒥᑎᐊᓗᓂ ᑭᐃᔪᓵᕆᐃᓄᑦ. ᐃᓕᓴᕆᓗᔪᒍ ᐱᐅᔨᓂᖏᓐᖓ ᐱᑎᐊᖅᓂᐅᓪ,
to be healthy and thriving for future generations. In affirmation of the
ᔪᑎᐅᓪ ᐅᖅᑭᑭᓯᑎᐊᖅᓯᓵᕆᔪᑦ ᑕᒪᐃᓐᓂᖅ ᐅᒪᔨᓕᒪᓂᖅ.
goodness of creation, God beckons us to respect all forms of life.

World Council of Churches Kyoto statement 1997

In the second week of the campaign for the January 2006 Canadian election Prime Minister Martin used the stage in Montreal to critique the United States as a public gesture of what Canadians should be wary of in the opposing Conservative party led by Stephen Harper. It was only with two weeks left in the campaign that Martin's symbolic climatic concern began receiving media support by reports that a Conservative government would not plan on fulfilling Canada's Kyoto obligations. As the election proceeded and the Conservative possibility became more likely, environmentalists began voicing their concerns. On January 12, 2006 Elizabeth May, who was then Executive Director of the Sierra Club of Canada and is currently leader of the Green Party, responded that "Canada re-established global leadership in Montreal" and that the country "must not shift from leaders to global villains without a vigorous public debate".[1] John Bennett, also of the Sierra Club, added that a review of Harper's comments on climate change while in opposition reflect "a lack of understanding of the international situation, a lack of understanding of climate science and a selective use of facts".[2] An additional Sierra Club representative concurred, stating that "Harper would move Canada more into the same camp as U.S. President George W. Bush".[3] With the dawn of January 23, 2006 the fear of Canadian Liberals and environmentalists came one step closer through the minority election of a Conservative government. Beginning with a case study of Harper's initial leadership response to the West's climatic uncertainty, my final story in climatic thinking will clarify a faith in economic rationality that binds conservatives and liberals in various manifestations of unresponsive double movements.

Just as the United States has Texas and its oil legacy, Canada has Alberta and its booming fossil fuel economy. It is from this western region that Harper's Conservatives

arrived with a view on climate change that is remarkably similar to that of President Bush, the former Texas Governor. The popular position that environmentalists feared he supports is represented in the report of Calgary Sun's Licia Corbella on the Montreal Conference. In her opinion, "much of the adult world has fallen for the ruse being used by so-called environmentalists with regards to the global warming debate".[4] This mockery is epitomized for her in the claim of a Greenpeace activist who stated in Montreal that "Global warming can mean colder, it can mean drier, it can mean wetter".[5] While these words try to symbolically capture the many uncertainties related to diverse regional changes in Gaia's climatic hierarchy, Corbella discusses the absurdity of this position by stating that "now that colder means warmer basically, anything goes".[6] Moving beyond scientific indeterminism to the issue of international obligations, she adds that meeting Kyoto would necessitate practically "shutting down our economy", as well as sending "billions of your hard-earned money to a government" in the developing world that is more corrupt than the Liberals.[7] As will be clarified, this Canadian neo-conservative position on the West's climatic uncertainty represents the IPCC science as flawed, Kyoto as bad for the economy and developing countries as in need of more economic rationalization rather than Liberal equity hand-outs.

Environmentalists were concerned that a new Conservative government would align Canada with this extreme position that also inhabits Washington, thus further impacting the international policy agreements of the recent Montreal Action Plan. This fear was not simply voiced by Canadian environmentalists. In a BBC News editorial after the Canadian election, Richard Black wrote that "When the history of the Kyoto Protocol comes to be written, Canada will appear as a particularly influential figure in the narrative".[8] He explains that before this election Canada's Liberals had "played the role of Florence Nightingale, nursing the treaty back from the brink of oblivion" through their movement away from Republican American interests beginning with ratification of Kyoto in 2002.[9] With Harper elected, the optimism of the Montreal Action Plan has given way to a fear that Kyoto would now recede

rather than advance in international importance. Since the Conservatives publicly stated in opposition that the Kyoto Protocol is "a terrible treaty for the country", and "a phoney, wasteful exercise", Black was concerned that Harper's government would follow "its powerful southern neighbor and simply leave the Kyoto process behind".[10] With Canada and the United States being two of the largest emitters of GHGs, he explains that the Kyoto Protocol and Montreal Action Plan would be seen as useless to other wavering countries who may feel supported in choosing not to participate.

Those concerned about Harper's national leadership began to observe some signs in April 2006 that did not instill optimism. His first action was the abrupt end of funding for groups who were promoting a program persuading "Canadians to do their bit to help the environment by cutting their greenhouse gas emissions", as well as placing under review "100 other climate change programs".[11] While the government explained its actions as being based on the ineffectiveness of Liberal policy, environmental groups were concerned that the wholesale nature of the actions revealed a government that was "poised to slash global warming projects".[12] A few weeks later the new government's approach to climate change policy became clearer. On April 13, 2006 a leaked cabinet document revealed the Conservative government was ready "to slash spending on Environment Canada programs designed to fight global warming by 80 percent", cut by 40 percent "budgets devoted to climate change at other ministries" and "claw back $260-million the Liberals had pledged to the United Nations to fund its international climate change programs".[13] These proposed actions suggest that Canada's Conservative government was following its historical view on Kyoto by "neither pulling out of the treaty nor meeting its emission-reduction targets", with the money earmarked for climate change re-directed to "help fund tax cuts".[14] The denial of Bush's American way appears to be manifesting a unique Canadian double movement that is replacing the nation's Liberal failure. This movement towards neo-conservative economic policy is my Canadian point of entry into a climatic thinking on the Christian roots of a self-

interested rationality belief which limits the West's response to Gaia's indeterminate triple movement.

Questioning Two Solitudes

In thinking about Canada-United States relations or Canada's domestic political scene, the economic rationality underlying the double movement becomes colored by complex regional and cultural dimensions. Up until the 2006 election, the Conservative Party's western Canadian roots and American-like neo-conservativism offered easy pickings for Liberals who tarred it as regional politics with little national applicability because it was "a smokescreen for a neo-conservative agenda that is foreign to Canadian values".[15] Roger Gibbins and Sonia Arrison describe this western evolution as it manifested in the 1990s Reform Party's political goal of achieving "leverage equivalent to the region's contribution to the national economy".[16] The nineteenth century westward rush of colonists to secure land before the specter of United States' expansion gave western Canadians a sense that "they were the ones breaking the soil and building the new country".[17] In late-twentieth century Alberta, this western view was transformed into the Reform, Alliance and then the twenty-first century Conservative politics. Its driving force shifted from the once economic primacy of agriculture and livestock farming to a fossil fuel industry that includes the oil sands, the "second largest source of recoverable oil in the world, after Saudi Arabia".[18] On the global market, Alberta's fossil fuels are significant because Canada "does not live under a perennial cloud of civil war or armed conflict" as in many Middle Eastern countries, and the nation is "positioned right next to the largest consumer of oil in the world, the United States".[19] These fossil fuel interests that have brought phenomenal economic growth to this region have come together with the western region's self-image as the hard working ground breaker to form the backbone of Harper's Conservative election. Of primary concern to this story is the Conservative's belief in an economic

rationality that underlies Canada's double movement as it manifests in their western response to what has been poetically described as the nation's two solitudes.

Hugh Maclennan entitled his classic novel *Two Solitudes* as a reference to the cultural divide that separates French Quebec and English Canada.[20] Much of Canadian politics has been defined by these two Western European cultures that came to co-inhabit the colonial land of eastern Canada after the eighteenth century French defeat in Quebec by the British, and the subsequent American displacement of English Loyalists. In many ways the battle has continued into the past century as Lower Canada, now the Province of Quebec, secures increasing political autonomy from a federal government that is largely seen as representing an English Canada. Looking over the history of these French-English relations, Maclennan writes that in "yielding again and again on small issues but never on a vital one" French Canadiens have seen "their concept of a dual culture accepted by the English-speaking compatriots whose ancestors considered them a conquered people".[21] While this French movement towards a dual Canadian culture has deeply informed federal Liberalism, it is by no means a dominant French approach in a province that has had two votes on Quebec sovereignty since the 1980s. In a critical analysis of Quebec's sovereignty movement, William Johnson states its goal is "to create a state wholly controlled by francophones, freed of having to share sovereignty with a federal government in which *les autres* outnumber them".[22] Though 90 percent of Quebecois agree that Canada is "the best country in the world", Johnson finds his province of Quebec to be "caught in a permanent aboulia, a chronic arrested state of repeating *non* such that they cannot say *oui* to federalism, or to secession".[23] Quebec's struggle between a national multiculturalism that embeds ethnic rights and a French state has in the opinion of many westerners disproportionately influenced Canadian politics.[24] Though this argument has been most vocal among western political economic interests, the Conservative government was surprisingly able to secure significant electoral support from Quebec for a neo-conservative economic agenda they first sold to *les autres* in western Canada.

Confronting this western alliance of tradition and economic rationality, Gibbins and Arrison critically explain that an emphasis on fiscal constraint that "would radically shrink the size of the Canadian state, is not the inevitable product of western experience".[25] Though the west has tended to produce fiscal conservative politics that aims at slashing Liberal policies, Gibbins and Arrison clarify that westerners "are not opposed to a reasonably strong national government; they are opposed only if that government fails to provide institutional expression for western interests and aspirations".[26] They also conclude that a country which has been economically gutted "of any clear sense of collective purpose, that has been radically decentralized in the effort to appease nationalist forces within Quebec, and that no longer has the financial resources or political will to pursue national social programs... would be of limited interest to Western Canadians".[27] The same also seems to hold in Quebec where, a half year after the election, Conservative support dropped by 9 percentage points because of an approach to international diplomacy which "seems to side instinctively and reflexively with U.S. policies", this includes their stance on climate change and Kyoto.[28] Bill Curry reported in early September 2006 that Quebec focus groups employed by the new Conservative government found their "position on Kyoto has weakened the government's credibility".[29] These findings forced the Conservatives to consider an environmental plan that could boost its public support while also maintaining fiscal constraint.

Neo-conservative influence on Canada's environmental policy began in the 1980s and early 1990s with a Progressive Conservative government that made budget cuts and off-loaded "environmental protection functions to the provincial level", weakened "federal coordination over provincial governments" and furthered the "decentralization of an already decentralized system".[30] This increasing governmental fragmentation played into the hands of financial interests over the following decade and a half of Liberal governments as industry used their political economic networks to influence conservative environmental policies in the Province of Ontario and in the western resource-based economies of Alberta and British Columbia.[31]

With regards to climate change, this national fragmentation also created a unique set of policy difficulties. In the words of Bernstein, "a high level of federal/provincial cooperation is required if negotiated agreements are to be implemented" because in Canada so many sectors that are "directly implicated fall either exclusively under provincial jurisdiction (e.g., forests) or under complex joint federal/provincial policy mandates (e.g., transportation or agricultural policy)".[32] The national continuation of this political economic situation contributed to a Liberal failure that Harper's Conservatives could utilize to slow Canada's response to Kyoto and the Montreal Action Plan.

On May 2, 2006 Prime Minister Harper released a national budget that began to confirm the opening months of speculation concerning the new Conservative government's response to the West's climatic uncertainty. As feared by those with environmental concerns, the first budget revealed that, as with Bush's American way, denial would be Canada's Conservative platform. The absence of budgetary money for dealing with climate change suggested to the David Suzuki Foundation that Harper had dismantled the Liberal climate change plan and replaced it with "expensive tax credits for transit passes", while making no mention of plans for researching and developing the infrastructure for renewable alternatives that will be necessary in meeting international emission reduction commitments.[33] During this same month the climate advisor for Republican politicians south of the border, by the name of Frank Luntz, arrived for a meeting with Prime Minister Harper.[34] His message "to cultivate uncertainty when talking about climate change" is something that Charles Montgomery argues was clearly already endorsed in the Conservative government's pre-election comments, budget cuts and the summer 2006 disappearance of the Environment Canada climate change website and its extensive "educational materials for teachers".[35] The western-based *Friends of Science* group fulfills this role of cultivating Luntz's uncertainty by working with some fertile public ground. A 2006 Ipsos-Reid poll found "four out of every 10 Canadians" to assert "that climate change is due to natural warming and cooling patterns".[36] Despite this limited public

understanding of the West's climatic uncertainty, Montgomery explains that in Canada "political leaders cannot afford to denounce mainstream science too loudly", and as such the frontline role of swinging public opinion in support of a Conservative shift in policy has fallen on organizations like Friends of Science.[37]

Like the Global Climate Coalition in the United States, research has found this Canadian group to be largely formed by "oil-patch geologists, Tory insiders, anonymous donors and oil industry PR professionals" that are concerned with re-opening the debate on climate science and policy.[38] The Conservative election "presented a golden opportunity" for the Friends of Science to expand their campaign "to re-open the debate on Kyoto" through a spring campaign which "circulated thousands of *Climate Catastrophe Cancelled* DVDs among politicians and news outlets", as well as running radio advertisements and financially supporting presentations by skeptical scientists such as Dr. Tim Ball.[39] The spring 2006 cross-country information tour by Dr. Ball focused upon how "Environment Canada and other agencies fabricated the climate change scare in order to attract funding".[40] His presentations neither reveal the Friends of Science as a funding source, nor mention that he "hasn't published on climate science in more than 14 years".[41] In the spring Dr. Ball also presented his material to "Alberta Tories in Calgary", a group of "federal Conservative MPs" and newspaper editorial boards in Ottawa.[42] In a relatively short period of time the Friends of Science began to significantly support a shift in Canada's political economic response to climate change, though one of its key figures, Albert Jacobs - a geologist and retired oil-exploration manager - admits that "success is very recent, and our success is tied to the Conservative government".[43]

Nearing the end of September 2006 the Federal Commissioner of the Environment and Sustainable Development, Johanne Gélinas, submitted a report auditing Canada's climate change response to the House of Commons.[44] Partially supporting the critical view of the Friends of Science and the Conservative government, Gélinas reports that the previous Liberal government's policies had been highly ineffective. Despite the "over $6 billion in funding for

initiatives", the federal bureaucracy still does not "have an effective government-wide system to track expenditures, performance, and results on its climate change programs".[45] More than that, Liberal "emission reduction measures" will not even come close to meeting Kyoto commitments, with the best case scenario being that they might "slow the rate of growth".[46] Unlike the Friends of Science, this documentation of Liberal impotence does not support a whole-sale rejection of climate science and international responsibility. If it is the case, as the Conservatives propose, "that Canada cannot realistically meet its Kyoto target", then Gélinas explains it is time to develop "new targets" and "make a concerted effort to slow the rate of growth of greenhouse gas emissions".[47] Beyond the necessary policy questions of how to support people, communities and governmental organizations in adapting to the negative impacts of climatic changes while adopting renewable sources of energy like wind and solar, the report challenges Harper's government "to clearly state how it intends to reconcile the need to reduce greenhouse gas emissions against expected growth in the oil and gas sector".[48] Clarifying the issue, the Commissioner explains that GHG "emissions in the oil and gas sector have increased over 50 percent since 1990", and that emissions related to Alberta's oil sands are projected to "double between 2004 and 2015".[49] Gélinas concludes that a successful national response to "a problem as pervasive as climate change demands that all levels of government, industry and business groups, science, academia, and civil society organizations collaborate".[50]

A couple weeks following the Commissioner's report, on October 10, 2006, Prime Minister Harper conducted a press conference where it was announced that his government's climate change response would be released the next week as a Clean Air Act. He explained that this response would "produce intensity-based targets over the short range and the long-term and they will cover a range of emissions".[51] An intensity-based approach refers to reducing "the amount of greenhouse gases created by each unit of economic output", and as such "does not mean that Canada's total output of greenhouse gases would decline, as

envisioned by Kyoto".[52] While the emissions per unit may be reduced through the "replacement of gas-guzzling cars by more efficient models, more efficient home appliances and new industrial equipment",[53] Canada's total emissions could continue to rise due to trends like increasing consumption levels and fossil fuel production in the expanding oil sands.[54] On October 19, 2006, the Environment Minister Rona Ambrose released Bill C-30, Canada's Clean Air Act, thus putting to rest all the speculation about this nation's climate change response. The continuation of Canada's doubly moving crisis displacement was highlighted by the opening words of Ambrose's press release which stated that "After 13 years of Liberal inaction on the environment, Canada's new Government is getting things done to improve air quality and protect the health of Canadians".[55] The new Act would "compel polluters to respect emissions limits and enforce emission targets", "adopt fixed caps on air pollutants beginning in 2010 and fixed caps for greenhouse gas emissions by 2025", provide "a federal tax credit to offset part of the monthly cost of monthly transit passes", commit "to a 5% average renewable content in Canadian motor fuels by 2010" and produce an "absolute reduction in greenhouse gas emissions of 45 to 65% from 2003 levels by 2050".[56] The means for this "absolute reduction" of GHGs in the future was revealed in Harper's earlier press conference when he explained that technology improvements in areas like CO_2 sequestration could reduce emissions by as much as 60 percent in 2050.[57] Beyond the value of technology in future emission reductions, the Act commits the government to consultations with industry over the next three years as a means to negotiating intensity targets. This intensity-based approach in the Conservative's Clean Air Act resulted in Kyoto not even being mentioned. A policy which turns its back on Canada's Kyoto commitments is exactly the focus of concern in the Environmental Commissioner's report.

Environmental critics were quick to respond to this new Canadian approach. Mittelstaedt explained that the Act's "only specific pledge is the 2050 greenhouse gas reduction" of 31 to 56 percent of 2003 levels, yet there is wide scientific consensus that just

stabilizing to a 2°C rise will require industrialized countries "to cut emissions by about 80 percent to 90 percent from their 1990 levels by 2050".[58] The David Suzuki Foundation's press release stated that "the Act lacks meaningful targets, sets most timelines in the distant future, and focuses on emissions intensity - all of which guarantee continued rising pollution levels in Canada".[59] Based on its lack of firm targets to reduce emissions and its focus upon more consultations, the policy analyst Dale Marshall of the David Suzuki Foundation defined the act as "an elaborate framework for procrastination".[60] Similarly, John Bennett of the Sierra Club of Canada characterized it as "nothing more than a recipe for delay" which appears to be "adopting the Bush Administration's standards".[61] Meanwhile, a Globe and Mail editorial concluded that "it's hard to shake the feeling that they are just going through the motions" of responding to climate change so as to maintain votes in Quebec while not doing anything substantial.[62] On the other side of the debate, business leaders largely "welcomed the new approach, which they said would set clear, achievable targets".[63] Nancy Hughes-Anthony, president of the Canadian Chamber of Commerce, announced that the business community is "pleased to see a long-term focus away from the very unrealistic short-term Kyoto targets".[64] After Harper's announcement of the Clean Air Act, McCarthy explained that this plan resonated with the interests of an "oil industry, which expects to double production over the next 15 years" and is "insistent that the federal Conservative government adopt an 'intensity-based' standard, as the Alberta government did in its proposed climate-change strategies".[65] This industry believes it would be too difficult a challenge "to reduce total greenhouse-gas emissions while achieving the planned growth rates of oil sands output".[66] If the language of the new Act did not fully reveal the government's siding with these oil industry interests, the Prime Minister's public engagement on the day the Clean Air Act was released made Canada's new approach to the West's climatic uncertainty abundantly clear.

At a convention of insurance brokers, Harper stated that when speaking to international investors "the most important sector story I have to tell is energy", for "Canada is

an emerging energy superpower".[67] He focused upon "the benefits to the economy for allowing growth in places that are Canada's economic strength", and then concluded with his future vision.[68] In a world where demand for resources is increasing "as the giant Asian economies of India and China continue their rush toward industrialization", the "potential for Canada's long-term economic growth is truly breathtaking".[69] While there are some obvious resonances between the fossil fuel interests that politically utilize Harper's western populism and an American Republican tradition which relies upon Christian populism, this is not the central point of this brief Conservative case study. Of primary interest to my climatic thinking is the way in which the economic rationality of conservatives - like Harper and Bush - and liberals - like Martin and Gore - is grounded in a pervasive Western Christian belief that underlies the crisis displacement of Canada's and North America's double movements. As will be seen, this common belief is central in undermining the development of the collaborative response to climate change envisioned by the Environment Commissioner. A clearer view on the historical and religious roots of this Western economic faith that interconnects conservative denials and liberal failures will now be contemplated before I finally elucidate an act of climatic thinking that is responsive to Gaia's indeterminism.

Original Scarcity

An anthropological introduction into the Christian roots of this faith in economic rationality is offered by Marshall Sahlins' research[70] which follows in the spirit of sociologists like Max Weber and R. H. Tawney, the environmental history of Lynn White, Jr.,[71] and recent religious economic analyses.[72] Much of Sahlins' analysis is dedicated to the Christian beginnings of Enlightenment thought, with Bernard Mandeville and Adam Smith prominently figured. He states Mandeville voiced a common "complaint when he observed that it was difficult to distinguish the obstacles to human endeavors that were due to man's body from those that come from the condition of the planet 'since it has been curs'd'".[73] In 1714,

Mandeville made the controversial proposition in *The Fable of the Bees* that those actions which were deemed vices by medieval Christians would produce the greatest public benefit.[74] Selfishness, greed and acquisitive behavior would increase society's wealth and thus increase the well-being of all people. Mandeville's great paradox was that while these actions would benefit society as a whole, they were based on private vices that reflected humanity's participation in a fallen world. With the thought of Hume and Smith, Mandeville's paradox was solved by a new proposal that transformed any vice which brought social benefits into a virtue. It was Hume's elucidation of economic scarcity that came to influence Smith's concept of an invisible hand which virtuously increases the wealth and well-being of nations through the self-interested behavior of individuals.[75] Though Smith only made a few passing references to the invisible hand, Joyce Appleby argues it became a powerful economic theory because the evolving global trade of the seventeenth and eighteenth centuries made it a truism that self-interested rational behavior was beneficial for a nation.[76] In trying "to understand the new sources of wealth", Appleby explains that the emerging economic proponents of the invisible hand "took the market's transcendence of political boundaries as evidence of a natural force".[77] Mandeville's paradox was resolved by Smith's elucidation of an economic rationality that, in Sahlins' words, transformed human misery "into the positive science of how we make the best of our eternal insufficiencies, the most possible satisfaction from means that are always less than our wants".[78] For many early supporters of economic rationality, the power of the invisible hand to create wealth resonated with a Christian belief in the possibility of a human response to original sin that could draw forth God's grace.

It is not until the calculus of the nineteenth century's neoclassical utilitarianism that economics shakes its association with these Christian beliefs and becomes primarily defined "as the branch of social science that deals with the allocation of scarce resources among competing ends".[79] This purely rational invisible hand that is central to various scientific and political economic dimensions of Western culture assumes there is a fundamental discord

between the nearly infinite desires of individual consumers and producers, and the scarcity of means to fulfill that yearning. As Gustavo Esteva states, the "'law of scarcity' was construed by economists to denote the technical assumption that man's wants are great, not to say infinite, whereas his means are limited though improvable".[80] Nicholas Xenos adds that economic scarcity is not merely a theory, but a way of organizing social relationships that "resonates with our quotidian experience".[81] It is about the cost of choosing one thing and denying another, maximizing technical efficiency so that satisfaction and profit are increased, and efficiently costing the social conflicts that arise because of society's inability to produce at the same rate as human desires. Lionel Robbins' classic quote succinctly refers to the Christian dimensions of this rationality:

> We have been turned out of Paradise. We have neither eternal life nor unlimited means of gratification. Everywhere we turn, if we choose one thing we must relinquish others which, in different circumstances, we would wish not to have relinquished. Scarcity of means to satisfy ends of varying importance is an almost ubiquitous condition of human behaviour.[82]

This economic rationality that ritualizes daily acts of consumerism in exchange for work is rooted in a Christian original sin that has as its aim the return of God's grace to the creation. Following this climatic thinking, economic rationality can be re-conceived as an *original scarcity* that recognizes the Christian context of an economic theory which intertwines the two sides of Canada's and North America's double movements. As will be seen, this original scarcity is the source of the crisis displacement which perpetuates the West's climatic uncertainty.

While original scarcity has given the West great power to industrially develop the world, the GHG emissions of this faith are today intertwined with changes in the climatic hierarchy that impact the ability of many communities to meet their needs. In Canada, the Liberal government's climate science projected that most regions will "experience warmer conditions,

longer frost-free seasons and increased evapotranspiration", though agricultural impacts across regions "will vary depending on factors such as precipitation changes, soil conditions and land-use".[83] Another report explains that "uncontrolled growth of GHG emissions... will contribute to an expected global temperature increase of roughly 1.5 to 6 degrees Celsius over the rest of this century", with the potential of increasing economic costs related to phenomena like extreme events.[84] Drawing upon the 2003 BC forest fires, the 2004 Prairie drought, the 1998 Eastern Ontario/Quebec ice storm and a Maritime region that has experienced 'one in a hundred year' storms three consecutive years, the report states that these events have "demonstrated how vulnerable communities are to the wide-ranging social and economic impacts of weather extremes and variability".[85] The 1998 ice storm that did more than $1 billion in damage and left more than 1.5 million Canadians without power is part of this national trend that saw the cost of weather-related disasters grow five-fold in the 1990s.[86] To deal with these costs economists extend the Western faith in original scarcity through the concept of environmental externalities that need to be rationally internalized into the economy.

Environmental externalities are defined as arising "when consumption or production of one economic unit enters into the utility or production function of another economic unit without any compensation".[87] An economic response to these unaccounted costs of actions that impact other individuals, communities and ecologies was first considered in the early part of the twentieth century by Arthur Pigou. His approach amounts to the "internalization of the negative externality" by making the offending party liable for their actions through taxation.[88] In the 1960s Ronald Coase argued against solving the problem through restraining the offending parties. His focus is on making a decision as to "whether the gain from preventing the harm is greater than the loss which would be suffered elsewhere as a result of stopping the action which produces the harm".[89] While Pigou allows government a liberal role in equalizing the negative effects that arise from faith in original scarcity, the Coase Theorem holds more strongly to a conservative laissez-faire view of an unfettered invisible hand.

Despite this difference, these two economic theories commonly extend original scarcity to the environment by offering different calculations of the price people are willing to pay to deal with externalities related to improper economic valuations of fossil fuel resources and the services of Gaia's climatic hierarchy.

As an alternative to this faith that fosters an internalizing of environmental externalities, ecological economists have most recently attempted to refashion economic theory within an ecological scientific understanding of Gaia's limits. Exemplary of this approach is the ecological footprint tool which converts resource consumption and waste flows into a definable space that is required to maintain specific economic actions.[90] This tool provides figures that clarify when individuals, groups, communities or nations are exceeding the ecological capacity of their space through appropriating the needs of global others. The ecological footprint transforms Appleby's earlier words, such that wealth created by the "market's transcendence of political boundaries" can no longer be taken "as evidence of a natural force" since this wealth is based upon cultural and ecological appropriation. Rather than focusing upon a global economic system whose lack of boundaries allows it to continually expand the internalizing of externalities, this approach adds global and regional ecological contexts that limit the rationalization of economic growth. But in offering an economic accounting of productive limits on a region by region basis and across various scales, the ecological footprint needs to be recognized as simply a secondary tool in responding to Gaia's indeterminate triple movement. Beyond this problem lies the issue that there is a capacity for ecological economic analyses to also support original scarcity, as explicitly seen in the "natural capitalism" of Hawken, Lovins and Lovins.[91] While recognizing that the interconnected nature of environmental issues requires businesses to embrace partnerships with various scientific and ethical understandings, these authors ultimately leave the final reference to the balance sheet. In their words, a financial system needs to be created "where all value is placed on the balance sheet, and where nothing is marginalized or

externalized because social or biological values don't 'fit' into accepted accounting procedures".[92] Scientific and ethical knowledge has to be internalized into economic models that account for environmental scarcities related to phenomena like Gaia's indeterminate response. Such an ecological economic approach largely maintains a Western faith in original scarcity that not only manifests in political economic double movements and in various economic theories, but, as will be seen next, also informs and limits that climatic science which is integral to any proposed response.

The highlight of the Friends of Science spring campaign to shift public opinion and government policy came on April 6 with the publication of an open letter to Prime Minister Harper in one of Canada's national newspapers that was signed by sixty scientists. The letter was concerned with an inconclusive science that was used by the Liberal government to promote Kyoto implementation policies that would, in their minds, squander "billions of dollars".[93] It stated that since it "may be years yet before we properly understand the Earth's climate system", the "most prudent and responsible course of action" would be to convene open hearings that take a more balanced view.[94] In fact, these signatories propose that if the international community knew in the mid-1990s what is known "today about climate, Kyoto would almost certainly not exist, because we would have concluded it was not necessary".[95] Arguing that the allocation of funds to stop climate change "would be irrational", they remind the Prime Minister that only 30 years ago "many of today's global warming alarmists were telling us that the world was in the midst of a global-cooling catastrophe".[96] As Montgomery points out, "only a third of the names on the petition were Canadian", and "Many of them were economists and geologists" whose research had "received money from the oil, gas and coal industries in the United States".[97] One of the signatories to the letter had a climate science background, his name was Dr. Ball. To understand how these scientists can minimize the IPCC's climate science, discount the international consensus of the Montreal Conference and

marginalize negative projections for developing nations, it is helpful to briefly consider the analysis of two signatories to this letter.

The applied mathematician Christopher Essex and economist Ross McKitrick wrote a popular Canadian critique that argues the IPCC has created a "convection of certainty" concerning climate change through the use of national governments, the media and a silencing of scientists who display contrary findings.[98] As with the letter, they claim that climate science is confronted with an "absence of understanding, not the presence of imperfect information", and as such more powerful computers "and more data will not guarantee" a better understanding to inform political economic responses.[99] Because of this almost intractable scientific uncertainty that has been described in this act as Gaia's climatic indeterminism, they conclude that a significant human impact on the climate has not been objectively validated. They raise this point so as to imply that business should go on as usual until the evolving climate science can objectively support good political economic policy decisions. While conceding that research may eventually prove that humans are impacting the climate, they agree with adaptation proponents, like William Nordhaus in chapter 3, that this may not be all that bad since the costs and benefits of these changes will at worst balance out.[100] They conclude that political interests are influencing the IPCC and undermining the effectiveness of science through a politicization of research that represents a "loss of nerve" in the development aims of economic rationality.[101] Their position reveals that the open letter written to Prime Minister Harper was composed by researchers who still believe in the extremely limited post-Enlightenment Western science and political economy which has fostered Gaia's indeterminate response to the West's original scarcity.

While the open letter represents an extreme neo-conservative extension of original scarcity into environmental science, this Western faith has much broader tentacles that also reaches into a liberal brand of ecological and climate science. This manifestation can be seen at play in the historical debate surrounding Jane Lubchenco's new environmental science

contract which proposes that research be more responsive to urgent needs through better public communication and the exercise of "good judgment, wisdom and humility".[102] Seven years earlier Lubchenco was the lead author of a report compiled by a team of ecological scientists from the *Ecological Society of America* (ESA) which defines the priorities of an ecological research agenda based upon a concern that if "scientists do not set [their] own priorities, others will do so".[103] The report, entitled the *Sustainable Biosphere Initiative* (SBI), explains that these priorities may not coincide with what ecological scientists view as their role in advancing knowledge that can improve the human condition in the face of various forces that are "rapidly deteriorating the state of the environment".[104] In focusing its research parameters on the clarification of ecological processes that are central to a sustainable biosphere, the SBI shows great concern in increasing knowledge of ecological complexity in global processes like the climate system, biological diversity and the response of natural processes to human systems. Though the SBI calls for an increase in basic research of these issues, public sharing of that knowledge and ensuring that research influences environmental policy and management, the pure research agenda of the SBI was still seen by some critics as missing the mark of an adequate scientific response to environmental issues.

The ecologists Ludwig, Hilborn and Walters structure their critique of the SBI around the recognition that it is difficult to achieve scientific consensus on how to mitigate the over-exploitation of resources because of factors that fall outside natural science research.[105] The prospect of wealth creation, the lack of scientific replicates in ecological research, the mismatch between ecological complexity and reductionistic management models, and "large levels of natural variability", all these factors make scientific consensus difficult to achieve.[106] Even if consensus can be achieved, it will not necessarily result in action. Because of these issues, the extensive history of over-exploiting resources and their environmental impacts, these ecologists propose a different agenda for promoting a sustainable biosphere. These consist of including research on human motivation and responses as part of ecology; taking

action on issues like climate change before scientific consensus is achieved because of the threat and time lags; relying "on scientists to recognize problems" rather than "remedy them"; resisting the focus of resources solely upon research when they can be spent on initiatives that address already identified root causes such as over-consumption; and confronting uncertainty by recognizing that science and technology cannot always provide clear solutions to problems of human-ecological relations.[107] In a direct critique of the SBI, they state that its "list of three research recommendations includes none relating to humans",[108] and consequently "ecological research that omits study of the dominant species, which is increasing its population in an unrestricted way and which is increasing its per capita consumption of resources at the same time, is not scientific".[109] With Lubchenco's later elucidation of a new scientific contract,[110] some of this debate appears to be internalized in her promotion of an interdisciplinary effort at knowledge creation that more fully analyzes human dimensions in understanding and responding to environmental issues.

In a 2000 co-authored article with the economist Dasgupta, Lubchenco displays the practice of this interdisciplinarity by bringing together ecological and economic scientists to consider the erosion of regionally unique adaptations in the face of continuous environmental changes.[111] Their approach to this problem is to have regional knowledge dialogue with global scientific knowledge in the creation of locally responsive adaptations. Though they recognize that discussions about sustainability need to engage a diversity of disciplines beyond that of ecologists and economists, their interdisciplinary research still primarily defines environmental issues as a problem of incomplete economic rationalization. After asking "why are markets inadequate at protecting the environment", these scientists respond by stating "that, for many environmental resources, markets simply do not exist".[112] Environmental issues are the result of market failures that have not properly internalized externalities, such as fossil fuel resources and the climatic hierarchy's services. In their words, methods "must be found to translate this knowledge into economic terms and to use that information to build strategies for achieving

sustainability".[113] A similar dynamic occurs in the IPCC, where the TAR explicitly states its focus "has been on identifying an efficient pathway through the interactions of mitigation policies and economic development, conditioned by considerations of equity and sustainability, but not primarily guided by them".[114] Both the IPCC and these researchers primarily call for interdisciplinary research that can improve the economic rationalization of environmental issues while sustaining development, and as such are deeply caught in the liberal side of the West's original scarcity.

Critiquing these economic assumptions, Hilborn and Ludwig note that economic optimization models that fuel ideas of continual growth "are applied to attempt to maximize yields even though the data provide little information about biological characteristics of the exploited stocks".[115] Ludwig goes one step further by explaining that the focus on economic growth is so incompatible with the nature of ecological science that it would be better characterized as a magical theory which attempts "to reconcile the irreconcilable".[116] Their critique suggests that the pervasive Western faith in original scarcity leads ecological scientists to lean on an economic rationality when confronted by Gaia's indeterminate response. As an alternative, Ludwig proposes that a "careful description of uncertainties in the present knowledge" needs to be emphasized so that the "magic" of this economic logic can be replaced by a science which "admits our limitations and confesses our impotence".[117] This scientific impotence is related to the powerful cultural belief in an original scarcity that has limited the evolution of the interdisciplinary IPCC and SBI research of Gaia's triple movements. The research of Hallman comes together with these ecologists to offer a methodological response to the impotence of original scarcity.[118] After pointing out that developing countries have fewer resources than rich nations for funding the research of scientists and economists who largely inform these deliberations, Hallman adds that "the IPCC's whole approach to analytic design has tended to be dominated by Western economic models, with their emphasis on the monetization of everything possible".[119] He suggests that

the IPCC's intercultural range of understanding is reduced by assumptions that are built into the structure of the dialogue itself. While resonating with the neo-conservative open letter's call for "a more balanced perspective on climate change", Hallman contemplates a significantly different response than these critics of IPCC science in suggesting that the West's original scarcity be contextualized by other cultural perspectives. To begin considering this intercultural expansion of my climatic thinking it is helpful to return to Sahlins' proposed methodological response.

The pervasive power of the West's original scarcity led Sahlins to propose a native anthropology for methodologically uncovering not only why scarcity so informs Western economic thought, but how this "same scarcity-driven creature of need survived long enough to become the main protagonist of all the human sciences".[120] From his anthropological position, original scarcity's economic rationality is firmly entrenched within the social sciences, with the result being "the bedevilment of our understandings of other peoples".[121] This is not merely a theoretical proposition on the part of Sahlins, for according to Nurit Bird-David he followed this tradition in his influential essay entitled *The Original Affluent Society*.[122] In his 1972 review of hunter-gatherer research, Sahlins offers the theory that this way of life is affluent because of the beneficial ratio between hours of work and leisure.[123] One of the major issues that Bird-David has with his theory is that in attempting to refute the cultural assumption that Western society is the epitome of affluence, Sahlins actually utilizes the economic assumptions of his Western culture. In the words of Bird-David, "he discussed hunter-gatherers' work in terms of practical reason and ecological constraints and analyzed their economy with none other than a microeconomic model focusing on individual's optimal, rational behavior".[124] In trying to posit an alternative interpretation of the affluence in other cultural ways of living, Sahlins' early work likewise fell into this Western faith. His subsequent conception of a native anthropology provides hard earned insight into a methodology that challenges social scientists to turn their gaze on Western culture and uncover

the deep religious roots of assumptions that limit an understanding of other cultures and how they relate with their ecologies. In recognizing this intercultural problematic in today's evolving interdisciplinary climate science, Hallman's critical analysis comes together with Sahlins' native anthropology to suggest that climatic thinking of Gaia's indeterminate triple movements is being unilaterally narrowed by faith in the West's original scarcity.

Etiquette for Climatic Thinking

The environmental spirit of Sahlins' native anthropology is epitomized in Rogers' ecological economic contextualization of sustainable development discourse within the historical usury debates of sixteenth and seventeenth century Europe.[125] While in today's world sustainability is informed by debates where "economic concerns entirely dominate social perspectives", Rogers explains that at the beginning of the usury debate on the morality of charging interest Christian interpretations were "more powerful than emergent economic interest".[126] He explains the general concern at this time was "that unchecked usury inverts the social order by making the world the Devil's so that people no longer know their place".[127] In confronting the trend of thought which led to the invisible hand, these moral arguments about the sin of a developing economic rationality suggested to Rogers an ethical response to its continued global proliferation today. While sustainable development "merely extends and aids in that expansionary project" through "not addressing the political aspects of this process" that is grounded in economic rationality,[128] the sin-concerned usury voices inspire a view of environmental issues as divine responses about the need to effect an "externalizing of internalities" that can socially and ecologically contextualize the West's original scarcity. The path for following this externalizing native anthropology of the West's past into intercultural relation can be clarified by contemplating some contemporary Christian views of environmental issues as divine signs in the world rather than scarcities in need of internalization.

A bridge across the Enlightenment gap which relegates Christian views of nature to a superstitious past is offered by Thomas Berry's theological analysis.[129] The crux of his religious critique centers on the dominant Western habit of assigning value to the world based solely on human well-being, and the resulting assumption that individuals have "the right and even the obligation to intrude upon the natural world as extensively as they are able".[130] Theological contemplation of the current environmental situation leads him to suggest that a new *universe story* is needed that can be both communal and personal as it reflects upon the quintessential integration of humanity, the Earth, the universe and divinity. This cosmological perspective draws upon the insight of physicists and ecological scientists to transform the West's story of original scarcity into one that can draw upon other Christian and religious understandings to foster the "integrity of the unfolding-life systems of the Earth, which are presently threatened in their survival".[131] In a critical analysis of an earlier work on the universe story offered by Berry and the physicist Brian Swimme,[132] Stephen Scharper finds the main problem of his vision is that it is a "text without a context".[133] This story, in Scharper's opinion, makes three assertions which do not adequately reflect upon the interconnection between current political economic realities and environmental issues: "(1) that the universe is self-referential; (2) that the universe story is a definitive story and is accessible to all people; and (3) that the adoption of the universe story will lead to an ecologically sustainable future".[134] He states these assertions neither prevent "a CEO of a transnational corporation from savoring the stars at his or her beach house on the weekend while employing children in a Third World sweatshop", nor "prevent that same CEO from adopting the new cosmology to promote his own capitalistic projects and products".[135] To modify the universe story Scharper begins by recognizing that Swimme and Berry's critical analyses of global corporations and consumerism are limited as they do "not dwell on ecological destruction as taking place within a context of winners and losers, those who are benefiting from the earth's destruction and those who are being destroyed by it".[136] This view leads Scharper to conclude that the universe

story needs to exist within an environmental social justice context so "that we not simply listen to the universe and assist in its unfolding but rather help the universe unfold and bend toward justice".[137] In other words, Gaia's climatic triple movements are divine signs concerning the locus of the sinful crisis displacement which requires a response that can participate in changing this situation.

While much of the Western world can often be blinded by original scarcity, both Scharper and Anne Primavesi describe the liberation theology of Latin America as offering an awareness of this sinful faith which is unequally manifesting ecological and social disruptions in the southern part of Gaia.[138] Primavesi explains that the social conditions liberation theologians live within require contemplating the political economic impacts of development "from the perspective of the poor"; and consequently they have seen "the visible effects of commodity relationships on the poor correlated to the 'invisible hand' of the market, and this 'invisible hand' as a surrogate deity".[139] The value of the ecological footprint is, in her opinion, its ability to represent the interaction of "ecological deterioration and material inequity" with "individual and institutional decision-making about consumption, economic growth, and energy use".[140] Primavesi proposes that awareness of the global impact of consumer involvement in economic rationality can be enhanced through contemplating "the complex conditions under which commodities are produced, the ways in which money is acquired and the means by which capital is expanded".[141] She adds that for theologians "to come to terms with the life-and-death issues of our time, there is no escape from reflecting upon and gaining an understanding of these complex relations".[142] This Christian approach to externalizing original scarcity reveals Gaia's climatic changes as a divine response to this doubly moving Western uncertainty that emits copious amounts of GHGs. A brief reflection on liberation theology offers me some intercultural guidance for practicing this aspect of Gaian climatic thinking.

The Roman Catholic tradition associated with liberation theology began in 1891 with "the first great social encyclical, *Rerum novarum*, by Pope Leo XIII".[143] By far the greatest Catholic proponent of this religious mission for social justice was undertaken by a Jesuit Order whose extensive missionary history in colonial Canada, Latin America and elsewhere prepared them well to "shape the Roman Catholic social tradition".[144] In the 1971 Roman Synod the Jesuits were pledged to "The Service of Faith and the Promotion of Justice", and "to work for justice in the name of faith".[145] This pledge came together with their work among Native converts of poverty stricken regions in Latin America to create a liberation theology that Douglas Letson and Michael Higgins states "is essentially transportable to any culture, particularly a culture that has a history of oppression as a determining feature of life".[146] Ushered in by the "Peruvian Indian priest-theologian, Gustavo Guttiérrez",[147] liberation theology is described by him as a religious concern for liberating those who suffer from the injustice of sins at the "root of all disruption of friendship and of all injustice and oppression".[148]

From his religious view on the oppressive signs already referred to by Scharper and Primavesi, Guttiérrez describes poverty as symbolizing two interconnected realities. The first comes from the *New Testament* reference to the poor person who lives in a degraded situation because of "the injustice of the oppressors".[149] While this appropriation is central to the rationality of the West's original scarcity, Gutiérrez describes the resulting material scarcity as "a sundering both of solidarity among persons and also a communion with God".[150] The second reference concerning poverty is as a spiritual metaphor concerning the openness that "is a precondition for approaching God".[151] Reflecting on the crucified Jesus, Gutiérrez describes this act as a gift that calls all to participate with awareness in the sinful condition:

> If the ultimate cause of human exploitation and alienation is selfishness, the deepest reason for voluntary poverty is love of neighbor. Christian poverty has meaning only as a commitment of solidarity with the poor, with those who suffer misery and

injustice. The commitment is to witness to the evil which has resulted from sin and is a breach of communion.[152]

Offering an ecological lens to this vision of spiritual poverty, Primavesi adds that God is understood as a force that liberates people from "a whole network of economic, social, political, theological and ecological relationships" that are sinful and oppressive in their separation of a divine social abundance from historical living realities.[153] For liberation theologians, one task in externalizing the West's original scarcity is making the "invisibility" of environmental and social injustice visible as a distinctly "human hand".[154]

Just such a Christian spirit of liberation presented itself in the form of an international ecumenical fellowship of Christian churches at the Kyoto negotiations as they approached their conclusion in late-1997. The World Council of Churches (WCC) released a letter that made the following statement:

> God's justice is strict but it is not cruel. We are all here in Kyoto as brothers and sisters equal before God within the community of creation - a creation which we all want to be healthy and thriving for future generations. In affirmation of the goodness of creation, God beckons us to respect all forms of life.[155]

Aware of the extent to which religious practice and understandings are historically intertwined with the political economy that has brought about Gaia's climatic response, Hallman explains that the WCC statement explicitly recognizes a Christian culpability that requires at least two ethical responses: "challenging the injustice and contributing to alternative approaches".[156] Gaia's climatic triple movement is here characterized as an issue of political economic justice that requires the "overdeveloped parts of the world" to be more responsible for the impacts of development while reflecting more deeply on "what is really enough".[157]

In March 2000 the *Earth Charter*, another international environmental document with liberation overtones, was publicly released by a broader global multi-religious and interdisciplinary community. The Earth Charter was created to define a common intercultural

ethical responsibility for human interactions with each other and the environment, and according to Rockefeller is "the most open and participatory process ever to have occurred in connection with the preparation of an international document".[158] Its initial impetus came from one finding of the 1987 Brundtland Report which suggested that fundamental principles needed clarification in creating a comprehensive approach to sustainable development.[159] At the Rio Summit there was a premature attempt to adopt a charter that outlined these principles, with its failure resulting in a comprehensive research initiative that was launched in 1994 by various United Nations and non-governmental organizations. Drawing upon research in "international law, science, religion, and ethics", the Earth Charter gives "expression to a number of universal religious values".[160] It symbolizes the vision of a global movement that, Rockefeller explains, is convinced environmental issues like climate change reveal that in the present moment "survival and future well-being are dependent upon an ability to develop and live in accordance with shared ethical values".[161] The charter's foundational value of participatory collaboration for defining these shared ethics is based upon three interrelated factors. First, today's world is "characterized by rapid change, increasing globalization, and growing interdependence" that has ecological, political economic and social dimensions.[162] The second factor is based on the recognition that problems like climate change and loss of biodiversity "threaten the foundations of world security".[163] Finally, Rockefeller states that "the most serious problems we face are big, complex, and interrelated, and they can be managed only in and through worldwide cooperation with holistic thinking and integrated approaches.[164] As with the WCC statement, the Earth Charter's call for a new partnership between "civil society, business, and government in support of major social and economic transformations" also proposes that responding to environmental issues will require the subservience of economic rationality to the optimization of ecologies and cultural ways of living.[165] After its completion the Earth Charter was suppose to be presented to the United Nations General Assembly in 2002 for international endorsement, but this final vision was not

fulfilled. Despite this international political stalling that signifies the West's crisis displacement, the Earth Charter inspires an intercultural dialogue in which my climatic thinking needs to engage as a means to contemplating a response to the West's original scarcity and resulting climatic uncertainty.

While the evolution of sharing beyond disciplinarity in the IPCC's climate science is inspiring, the Earth Charter extends my climatic thinking into an intercultural etiquette that holds original scarcity in check through two distinct moves. The first native anthropological methodology delves into the historicity of Western climatic relations as they ecologically and cross-culturally interact with whatever is the focus of research, as reflected in this story by the connecting of the double movement's common economic rationality to a historically deep original scarcity. Second, this knowledge of the West's interaction with the climate system needs to be externalized as an essential element of intercultural dialogues that are concerned with critical responses arising from alternative understandings. By embedding the world's diverse understandings within a planetary awareness of global interdependence, the Earth Charter nurtures a research "ethic of respect for other traditions and an openness to learn from others while remaining faithful to its own particularity".[166] Contemplating my first step of climatic thinking out towards these other two acts briefly returns me one more time to the insularity of original scarcity as it manifests in Harper's western response to Canada's two solitudes.

Entering Canadian Solitudes

As the first year of Harper's minority government progressed, a leadership style similar to that of George W. Bush's "foundation that will not shift" began making itself apparent. Signs that the Prime Minister's Office held a firm hand over all cabinet minister decisions was further supported by an August 2006 report on the release of many deputy ministers from ministries like Environment, Industry, Natural Resources and Indian Affairs.[167] Because in the

past "there has been a good deal of continuity in the ranks of deputy ministers when new governments take office", Lawrence Martin reported that this shift in tradition came as a surprise.[168] In following these departing voices Martin speculates that the Prime Minister's economic focus does not "want high level bureaucrats who exercise the challenge function".[169] One released bureaucrat connected this speculation to Harper's quick political decision to support Israel's July 2006 incursion into Lebanon by stating: "When you live in a world where options aren't necessary, I suppose you don't need much of a bureaucracy".[170] To symbolize this government's etiquette Martin offers one last story about a Prime Ministerial flight which saw the pilot removed from his duties upon landing because he insisted that Harper turn off a cell phone and Blackberry while in the air. While the pattern of signs coming out of Ottawa guide Martin to conclude that "In Harpertown, you fall in line or fall from favour",[171] they also highlight a Canadian political economy that is the antithesis of an introspective native anthropology and Earth Charter etiquette. My climatic thinking joins Harper, George W. Bush and Paul Martin as tragic leading symbols of a Western culture mired in original scarcity and largely incapable of truly engaging others in responding to Gaia. This leaderless political economy has been the focus of my first Gaian act in climatic thinking. I now turn towards an alternative way out of Canada's two solitudes than that of Harper's western "foundation that will not shift".

The Canadian philosopher John Ralston Saul describes the paradox that has locked Canada into two solitudes for the past century and a half.[172] He begins by pointing out that the divide between the British Scots and Irish on one side and the French Breton and Norman immigrants on the other hid the commonality that both groups "were the descendents of the losers in the wars waged by London and Paris for central control and the elimination of both regional cultures and languages inside Britain and France".[173] There is in Saul's opinion "no more eloquent illustration of the colonial mind-set than a bunch of Celts and Vikings in a distant northern territory insulting each other as les anglais and the French as if they were the

descendents of the people who had subjected and ruined them".[174] In contrast to this official post-Confederation view of a dual culture, Saul explains that the country's early strength was built upon a complex social process unlike most nineteenth century nation building because of its basis in "three deeply rooted pillars, three experiences - the aboriginal, the francophone and the Anglophone".[175] Clarifying his meaning, Saul reminds us that preceding the last one-hundred-and-fifty years of a narrow two solitudes there were "some three centuries during which francophones and anglophones were either dependent on Natives for survival and advancement or were engaged in an alliance of equals with the Natives".[176] The size, diverse features and sublime nature of Canada made it, according to Saul, apparent to colonists that the land could not be conquered in the way that "lies at the heart of the European idea and of its American child".[177] In contrast, colonial Canadians "survived in large part by compromising with the place - with the Native population and with the demanding requirements of a society which was dominated by the difficult place in which it was found".[178] Some French and English colonists wrote of solitude as a positive "natural state of being and an advantage in such a large, marginal, northern country" rather than "a negative which prevents communication or common perceptions or actions or shared sensibilities".[179] It appears that when living within a land that cannot be dominated it makes sense to share intercultural knowledge as a means for being responsive to natural powers that transcend human capacities.

This social Canadian legacy that historically contextualizes the idea of two colonial solitudes and the successive political economic double movements parallels the methodological spirit of an Earth Charter that responds to changes in the climatic hierarchy through defining a new respect for "animals, plants, and ecological systems with which we are linked in the web of life".[180] Gaia's regionally manifesting solitudes are the natural contexts of the intercultural and interdisciplinary dialogues that my climatic thinking needs to engage, and their focus is Saul's ecologically grounded tripartite vision which draws forward Canada's

symbolic Maple Leaf. Rather than the leaf's three branches symbolizing Native, French and English, it is possible to translate this branching trinity into contemporary Canadian terms. First, there are the Native cultures that offer diverse visions on this continent's many bioregions as their cosmological point of origin. Another branch consists of the Western colonial experience which is largely grounded in Celtic and Norse origins. Finally, these two groups interact with post-Confederation newcomers from diverse global origins that offer more recent multicultural perspectives on Canada. It should also be noted that these three experiences that carry within them manifold diversity symbolically come together in a leaf stalk which represents the ecological and cultural sinews between the various experiences of this northern solitude. This Canadian symbol opens my act of climatic thinking into a relation with two other acts that can transform an understanding of Gaia's climatic triple response. While the disproportionate force of changes in Canada's north leads one act to engage Inuit voices who want greater intercultural representation in the national, North American and international climate change dialogues, Saul's reference to Canada's colonial past being grounded in Norse and Celtic cultures defines the native anthropological scope of a hermetic act that moves forward in time from medieval Europe into my experience of Toronto's current urban multicultural presence. In both these acts, my Canadian climatic thinking of Gaia's triple response to the West's doubly moving original scarcity is guided by an Earth Charter etiquette that recognizes all cultural beliefs "have much to learn from the ongoing collaborative search for truth and wisdom".

ACT II

Inuit Qaujimajatuqangit Dialogues

5 ᐃᓄᐃᑦ ᖃᐅᔨᓴᕐᖃᖏᑦᑐᑎᒍᑦ ᐱᓕᕆᔨᖃᖏᕆᐅᑦ ᐊᒥᖃᖅᓂᓪᓗᒃ ᐱᓕᕆᖃᖅ
Inuit Qaujimajatuqangit's Traditional Sharing Way

ᐅᑭᐅᖃᑦᑕᖃᑦ ᓄᓇᕗᑦᐅᓕᓐᓇᖅᑐᓪᓗᒍᑦ
The North cannot be lived
ᐊᑕᐅᓕᕐᒧᑦ ᐃᓄᐃᒍᑦ.
by one person.

Betsy Annahatak, in Arlene Stairs 1992

ᐃᓄᒃ ᐊᐃᒍᓇᓕᒃᑎ ᐋᓱᐃᑐᐃᓇᐃᕐᑕᑐᖃᖅ ᐊᕿᑎᒥᑦ
The Inuit hunter is not extracting from the environment
ᐊᑕᑐᐊᖃᖅᑎᒋᓕᖃᖅᑎᑕᐃᖅᑐᖃᖅᑐᑦ ᐃᓄᐃᓂᒃ ᐊᒻᒪ ᐊᕿᑎᐃᕐᓂᓄᑦ.
but creating a bond between his people and their environment.
ᑕᐃᒪ ᓇᑦᑎᖅ ᑐᓂᓱᕋᐃᒪᒪᑦ ᐊᐃᒍᓇᓕᒃᑎᒍᑦ, ᐊᒥᖃᖅᖃᓂᐅᔭᖅ
When the seal gives itself to a hunter, it is an act of sharing in
ᑕᐃᐃᓇ ᓇᑦᑎᖅ ᐅᒪᔪᓕᐅᖅᑐᓂ ᐃᓄᐅᖅᑐᓂ.
which the seal is transformed from animal to human.

David Pelly 2001

ᐊᓗᐅᑦᑕᐃᓕᓐᑎᒋᐊᖃᖅᓯᔭᑦ ᓄᓇᐅᑦ ᑲᔪᓇᔅᓂᐃᖏ ᐊᒻᒪ ᐅᓵᕆᔨᑎᐊᑐᒍ
We need to conserve the land's beauty and respect its generosity,
ᐃᖅᑲᒍᓗᑦᑎᐊᔅᓂᐃᖏ, ᐊᑐᑦᑎᐊᔅᑐᒍ ᐊᐃᓇᐅᒪᔪᐃᓇᔅᓄᓕᑦ ᐊᒻᒪ
using it wisely to insure the survival and pride of many
ᐅᐱᒋᔅᓄᓕᑦ ᐊᒥᓗᑦ ᑭᐃᒍᓱᒋᐊᓂᐊᖅᑐᑦ.
generations to come.

Peter Irniq, Commissioner of Nunavut 2004

The December 2005 international Montreal Conference on climate change saw the Inuit Circumpolar Conference (ICC) submit a human rights "petition to the Washington DC-based Inter-American Commission on Human Rights seeking relief from violations of the human rights of Inuit resulting from global warming caused by greenhouse gas emissions from the United States".[1] The petition is based upon scientific and Inuit documentation of changes in the climatic hierarchy that are destroying "the Arctic environment" and "the hunting-based economy of Inuit", and evidence that the United States "is by far the largest emitter of greenhouse gases", yet has not joined "the international effort to reduce emissions".[2] The petition's two-fold goal is to press the United States to adopt mandatory limits to its emissions by co-operating with the community of nations to "prevent dangerous anthropogenic interference with the climate system", and it requests that this superpower "work with Inuit to develop a plan" for northern adaptation.[3] The ICC's Chair, Sheila Watt-Cloutier, clarified that the "petition is not about money", but rather is a request that is based on an Inuit tradition:

> We submit this petition not in a spirit of confrontation - that is not the Inuit way - but as a means of inviting and promoting dialogue with the United States of America within the context of the climate change convention.[4]

While all the stories in this act are concerned with understanding this traditional Inuit way of dialogue, the focus here is upon Inuit political economic critiques that suggest an intercultural extension of interdisciplinary climate science and international diplomacy.

The ICC was formed in 1977 as a multinational Inuit effort to establish Arctic policy "based on indigenous environmental knowledge and expertise, for an Inuit homeland that reflects Inuit concerns about the modernization process and future development, together with

ethical and practical guidelines for human activity in the Arctic".[5] Its attempt to counteract environmental impacts in the Arctic has led the ICC to claim "the right for international recognition of the Inuit as resource conservationists".[6] Mark Nuttall explains that the ICC is representative of postcolonial Native organizations that have emerged to give "a greater voice to indigenous peoples throughout the circumpolar north".[7] What makes these organizations unique from other environmental advocacy groups is the way in which political action is primarily informed by Native knowledges that are fundamentally different from Western thinking, perhaps most strikingly in their traditional understanding of human-nature relations that "question the legitimacy of orthodox scientific environmental management".[8] Exemplary of the continual evolution of these late-twentieth century dynamics, the ICC argues for a greater inclusion of IQ "in strategies for environmental management and sustainable development".[9] Though the past few decades has seen environmental management research increasingly recognize the ecological validity of Native knowledges like IQ that "have access to information unavailable or denied to scientists",[10] my email dialogues with Jaypeetee suggest that these gains are still limited by significant cultural blocks to the development of Western climatic thinking.

In one series of emails Jaypeetee explained to me the limitations Western assumptions impose on northern environmental research that utilizes IQ:

> One of my criticisms of the treatment of indigenous knowledge and IQ is that it's a thinly veiled corporatist agenda regarding the environment. It's way too specific to corporate style resource development and management to really be considered indigenous knowledge.[11]

His email reminded me of Herman Daly and John Cobb's environmental discussion on the "fallacy of misplaced concreteness" which they drew from the philosophy of Alfred Whitehead.[12] They describe this fallacy as referring to times and places where "thinkers forget the degree of abstraction involved in thought and draw unwarranted conclusions about

concrete actuality".[13] The climatic basis of the ICC's petition against the United States intimates the economic dynamism of this fallacy, a result of which is to bring the benefits of industrial economic growth to those in North America's colonially developed centers while the costs of this way are externalized onto others like Inuit in the Arctic. While the common Western response to this problem has been to increase economic rationalization through a proper accounting and managing of the world's goods and services, Daly and Cobb's analysis suggests that the complex nature of environmental issues arising pre-dominantly from the global institutionalizing of this economic rationality raises considerable questions concerning this approach. Their issue is with an economic view of environmental issues that neglects "aspects of concrete experience... in such a way as to minimize restructuring of the basic theory".[14] This resonates with Jaypeetee's critique that economic rationality is limiting a Western appreciation of IQ. Together these voices suggest that both IQ and environmental issues are being treated as economic variables in Western environmental management strategies; and because of this some basic intercultural questions about human-nature relations that are central to understanding the West's climatic uncertainty are left unasked.

These parallel critiques reveal two trends that I confronted during the engagement of IQ dialogues. First, climate researchers tend towards an economically rationalized view of the West's climatic impact on the north that utilizes IQ's ecological knowledge to promote economic adaptations. At the same time, traditional IQ understandings of human-nature relations that may provide cultural guidance for climatic thinking on the changing climatic hierarchy are denied. Jaypeetee reflected on what Western researchers and Inuit need to confront in order for IQ to offer the full range of its potential guidance:

> The fact remains that Inuit Qaujimajatuqangit is a semi-literal translation of the original term in English - and in the passive tense at that. I have suggested on a number of occasions taking out the reference to 'old' in Qaujimaja**tuqa**ngit, and making the term an infinitive - Inuit Qaujimaningit - or simply, Inuit Knowledge.[15]

As will be seen, Jaypeetee's analysis suggests that climate researchers who engage IQ tend to focus on ecological knowledge which can be slotted into Western economic models, while the challenge of traditional understandings are marginalized in the definition of IQ itself. Consequently in this story I focus upon that which is embraced and denied by researchers so as to clarify the intercultural dimensions of the Western fallacy highlighted by Daly and Cobb and Jaypeetee, while also being guided by IQ towards a more mutually constituted climatic thinking.

Rationalizing Northern Changes

The IPCC's TAR explains that the Arctic is important to the global climate because of the major influence changes in this area can have on the oceans.[16] Since the north is also expected to experience the brunt of the West's climatic uncertainty first, the IPCC and ACIA describe these icy bioregions as harbingers of the ecological and cultural disruptions that will eventually impact other regions of the world in various unique ways depending upon the localized interrelations of the climatic hierarchy. In the words of the IPCC, climate change will "affect some key polar drivers" that "will be self-amplifying and, once triggered, will affect other regions of the world for centuries to come".[17] Likewise, the ACIA warns that while the north provides "an early indication" of climate change, its impacts "will also reach far beyond the Arctic, affecting global climate, sea level, biodiversity, and many aspects of human social and economic systems".[18] Though the IPCC and ACIA offer similar projections of the West's climatic uncertainty, there is also a distinct difference in the ACIA's more extensive inclusion of Native knowledge in its research. My climatic thinking's entry into these IQ dialogues concerning the Western rationalization of northern changes begins by contemplating the ICC involvement in the ACIA research.

As with the IPCC, the ACIA represents a significant interdisciplinary research endeavour that included "more than 300 scientists from 15 countries", as well as intercultural

dialogue that engaged the Native knowledges of six indigenous peoples organizations from the global north - Aleut International Association, Arctic Athabascan Council, Gwich'in Council International, Inuit Circumpolar Conference, Russian Association of Indigenous Peoples of the North, and the Saami Council.[19] Despite the involvement of the ICC, a few months after the ACIA's release in November 2004 a response co-authored by Watt-Cloutier clarified the limited nature of this research document.[20] It states that "the six Arctic Indigenous peoples organizations submitted a statement to be included at the beginning of the science assessment and summary volumes" which was "rejected as being too political".[21] One excerpt states:

> To Arctic Indigenous peoples climate change is a cultural issue. We have survived in a harsh environment for thousands of years by listening to its cadence and adjusting to its rhythms. We are part of the environment and if, as a result of global climate change, the species of animals upon which we depend are greatly reduced in number or location or even disappear, we, as peoples would also become endangered as well... It is of central importance that the Arctic states, armed with the ACIA, set an example to the world by reducing significantly their own emissions of greenhouse gases.[22]

While this statement seemed too politically motivated for the objective community of researchers whose homes are often not in the north, these Native groups were moved to push scientists towards a more forceful statement because of their position in an environment that was quickly changing and impacting northern living. The rejection of the intercultural assessment reveals the ACIA's scientific observations to be clearly limited because, as the ICC states, the report "does not address targets or timetables for reduction of greenhouse gas emissions".[23]

This ICC critique situates the ACIA's limited response to the West's climatic uncertainty close to the IPCC reports which are predominantly informed by Western interpretive frameworks for interdisciplinary scientific research and political economic responses.[24] On the scientific front, both the ACIA and IPCC rely upon Western models and

research that describe the scope of impacts observed in the Arctic thus far, as well as projecting future trends. The ACIA projects that the north's warming will speed up and result in the shifting northward of vegetation zones and animal species; increase of storms in coastal communities; melting permafrost that will increase GHG emissions and disrupt infrastructure; and melting of sea ice that is impacting marine life and ocean ecological processes of the climatic hierarchy.[25] On the political economic side, consequences of these changes are expected to be costly for people living in the north, with the IPCC speculating that the long-term effectiveness of Native adaptation strategies may be frustrated by factors beyond "the management of small, isolated communities".[26] Migratory animals, transnational commercial interests, international political economics and the global population are but a few identified factors that may influence northern adaptations, all of which were surely important considerations in the ICC's human rights petition against the United States and critique of the ACIA. But it is not simply Inuit adaptive practices that are projected to be disrupted by these changes, for the IPCC also notes that there will be difficulties for economic institutions such as mining and oil extraction which will have to deal with the engineering costs of erosion and coastal instability related to resource extraction and global market transportation. Despite this potential northern disruption, the TAR tempers its concerns by stating that the costs and "impacts may be relatively minor" since "the populations of humans and other biota within polar regions are low".[27] While the economic costs may be minimal, the IPCC also reports "the possibility remains that predicted climate change eventually will increase the overall productivity of natural systems in polar regions".[28] The ACIA also finds there to be potential economic benefits of northern warming, such as melting sea ice that could open a Northwest Passage and decrease shipping costs, agricultural benefits that may accrue due to "longer and warmer growing seasons",[29] and the potential of increased access to oil and mineral reserves. This economic view on the benefits of the West's climatic uncertainty existed as early as the 1990s when Meyer-Abich suggested that "towards the northern edge of current core

agricultural and forestry regions, warming may enhance the productive potential in climatic terms".[30] The ACIA adds that while agricultural growth is a possibility, the realities of limited "infrastructure, small populations (limited local markets), and long distances to large markets are likely to continue to be major factors limiting" this progressive trajectory in the Arctic over the short-term.[31] Where all this economic rationality leads is not all that surprising in light of the fallacy misplaced concreteness and Jaypeetee's assessment of what the West denies in IQ.

After assessing the inflationary economic impacts of disrupted transportation routes from the south, the IPCC continues by stating that "new transport opportunities, growing communities, and easier mining will create new wealth - but only for those who move away from traditional lifestyles".[32] The ACIA similarly suggests that Native knowledges are being threatened as the changing weather transforms "species range and availability" and "weather conditions present serious challenges to human health and food security, and possibly even the survival of some cultures".[33] Meanwhile, the IPCC compares the adaptability of Native and technologically developed communities:

> For indigenous communities following traditional lifestyles, opportunities for adaptation to climate change appear to be limited. Long-term climate change, combined with other stresses, may cause the decline and eventual disappearance of communities. Technologically developed communities are likely to adapt quite readily to climate change by adopting altered modes of transport and by increased investment to take advantage of new commercial and trade opportunities.[34]

While IQ may continue in an evolving form that informs daily ways of living in "technologically developed communities", these reports imply that it will increasingly take a back seat to Western economic rationality and its institutional structures. Most certainly, Western knowledge will be defined as the primary option for future adaptation as the Inuit are fully initiated into Rogers' introductory reference to the "newly stupid".[35]

As the lead author in another analysis, Rogers provides an ecological economic critique of this dynamic that utilizes changes in the climatic hierarchy as a means of expanding a Western political economic response.[36] These authors argue that environmental issues have extended the influence of economic rationality through a dynamic that increases the scope of economic scarcity experienced by individuals, communities and nations on regional and global scales. In this sense, the disruption to northern ways of living brought on by the West's climatic uncertainty becomes one more means for processing other cultures into Western ways. Rather than climate change making apparent the fallacy of misplaced concreteness, Rogers' review of common environmental economic analyses suggest that the belief in the substitutability of human ingenuity for natural processes maintains the reduction of environmental issues to "one more subjective consumer choice" on a global market.[37] There are a couple of ways that this theory resonates with the political economic discourses of the IPCC and ACIA reports on IQ and climate change. First, the projection of the market economy as the primary adaptive response to climate change in the north typifies the extension of economic rationality. Second, the characterization of IQ as under threat and yet having useful ecological knowledge that can be utilized in Western models further supports Rogers' claim that "when economic and ecological scarcity become permanent features of modern life, the ability to 'wonder' about other forms of social exchange are more difficult".[38] Beyond the projected loss of ecological knowledge that could be useful for the ACIA, the West's climatic uncertainty effects the recession of important traditional IQ understandings about the social exchange underlying such indeterminate human-nature interactions.

This climatic extension of Daly and Cobb's fallacy to a political economic force that globally changes cultures is not new, for it merely follows in the footsteps of Western Enlightenment dreams about instituting economic rationality on a global scale. In the words of Berkes, this "belief in the ultimate and final victory of Western science has been accompanied by the belief that all cultures would merge into one 'correct' way of thinking about human

development and well-being".[39] Based upon research with Native knowledges, Berkes finds that environmental issues are in fact challenging this assumption, despite its continued dominance in the Western-based research of the IPCC and ACIA. While the objective validity of climate science is "complicated by insufficient scientific knowledge... of physical and ecological processes in the Arctic, and by the lack of historical baseline data against which to measure data",[40] neo-classical economics is running up against "biophysical limits dictated by ecological considerations" that make the ideals of development increasingly precarious.[41] Berkes' assessment of the situation for Western researchers is that "ecology and economics are in a state of flux as new paradigms threaten to take over the old".[42] As a response to these difficulties, Riedlinger and Berkes propose that IQ can be helpful to climate researchers given that Inuit "assessments of change are based on cumulative knowledge of local trends, patterns, and processes, derived from generations of reliance on the land".[43] By bringing this cultural knowledge together with Western science they state it may be "possible to translate global processes such as climate change into local-scale understandings of potential impacts".[44]

Beyond the ICC's critical assessment of the ACIA report is a review of a number of projects which integrate Western research and IQ. The ICC highlights these research activities to make the point that traditional "experiential-based knowledge... is now broadly accepted as legitimate, accurate, and useful, although until recently it was dismissed by some scientists as anecdotal and unreliable".[45] Once again highlighting the traditional Inuit way of dialogue, the ICC also relates that "Inuit have repeatedly offered to share what they know of their environment in the expectation that their observations will assist governments to manage natural resources" in a way that can benefit both Western and Inuit cultures.[46] The ICC's critique of the ACIA and Jaypeetee's correspondence make it clear that researching this northern manifestation of the West's climatic uncertainty requires my climatic thinking to engage the intertwined ecological and traditional dimensions of these IQ dialogues.

Inuit Tradition

At the beginning of the workshop in Chesterfield Inlet Simionie put up the graph of the projected average temperature changes across Canada's various regions which we had discussed the day before in my hotel room. Eli began the dialogue by expressing his frustration at the lack of knowledge sharing that has shaped the relation between scientists and Inuit:

> Through news the scientists and politicians could let people know what is happening in the past and the present. If they did this then people would know more. They know what they are doing, but they did not even make reports to work with the people.

Moments later Louie supported Eli by stating "We really don't believe scientists anymore because they never report anything". He followed this by asking a poignant question that highlights ICC's description of the Inuit way as being based in dialogue; "Why don't they give information to us and why don't they want to know from us?" Both these elders expressed the common sentiment of participants that researchers have generally not engaged a sharing dialogue with Inuit in the past, and this is no reason to assume that research on the present climatic changes will be any different.

While the West's climatic uncertainty has fostered an interdisciplinary sharing of science, for Inuit these academic understandings are secondary to concerns about adapting presently to life in a changing north. The workshop participants estimated that most of the community received 75 percent of their food from hunting, fishing and gathering. This way of life offered ecological observations from Chesterfield Inlet that were similar to those predicted in the IPCC, documented in the ACIA and reported in other Inuit-based research .[47] They included declining water levels in rivers and lakes that have impacted the spawning of arctic char; a warming of weather over the past ten years that is changing the timing of seasons; affecting the laying of bird eggs; reducing sea ice; and increasing polar bear frequency around the community; northern migration of insects, birds and animals from the tree-line, including the recent observation of a first grizzly bear; and increased frequency of extreme cold days in

winter, hot days in summer and snow storms. These potential climatic changes motivated participants to request a more equal exchange where knowledge and adaptations could be transformed through dialogue. Though the resonance between IQ's ecological observations and Western science suggests there is potential for the type of partnership desired by the workshop participants and the ICC, the critique of the participants raised the specter of a less respectful historical relation between researchers and Inuit that my climatic thinking needed to engage in these dialogues.

From the Native perspective of Smith, Western research is historically grounded in an Enlightenment view "which assumes that Western ideas about the most fundamental things are the only ideas possible to hold".[48] Exemplifying the West's assumed superiority, Warren Matumeak, an Inupiaq elder from Alaska, spoke about how ecological researchers engage him:

> I've been telling them, this is how it is. They go do scientific study and do a lot of work to prove it, and they come back and say, 'Warren, you were right.' It's just common sense. They use science to prove things we already know.[49]

Smith adds that this approach to research "is imbued with an 'attitude' and a 'spirit' which assumes a certain ownership of the entire world", and "which from indigenous perspectives 'steals' knowledge from others and then uses it to benefit the people who 'stole' it".[50] Building upon his concern that scientists are not sharing knowledge, Eli also felt that researchers have in the past used IQ without giving people proper credit:

> After he dies, the scientists will take what he says and use it, but they will not give credit to the elders. That happens, the scientist and elders don't agree all the times... The elders try to say something to the scientists, but they won't agree.

Based on their IQ-based climate change study, Riedlinger and Berkes similarly conclude that communities are frustrated "over the lack of useful feedback from scientists or input into research and decision-making".[51]

One consequence of this lack of dialogue on northern changes in the IPCC and ACIA is that Western economic rationality becomes a dominant model for incorporating only those aspects of IQ which are relevant. Western scientific and political economic assumptions are left unquestioned by researchers despite the impact climatic uncertainty is having on the Inuit way of life in the north. Such a critical stance, based upon years of research with Sub-Arctic indigenous knowledges, led Julie Cruikshank to state that the "recasting of the same ideas as indigenous science or, traditional ecological knowledge (TEK) continues to present local knowledge as an object for science rather than as a kind of knowledge that could inform science".[52] In response to this situation, Riedlinger and Berkes propose that progress has to be made "in accepting traditional knowledge as a source of knowledge and understanding, not in the abstract, but in practice".[53] These critical perspectives suggest that in engaging IQ dialogues on the West's uncertainty my climatic thinking needs to be aware of this lengthy Western tradition that has repeatedly enacted the fallacy of misplaced concreteness in intercultural forums.

Beyond the limited engagement of IQ represented in the IPCC and ACIA there are more enlightened Western critics who are not enamoured with the validity of such intercultural research in any form. Referring to the Sachs Harbour research on Inuit observations, Christopher Essex and Ross McKitrick state that "a non-random sample of Inuit recollections about recent springtime temperatures" has been used by proponents of climate change research to suggest that "Sea ice is melting, polar bears are starving and the traditional lifestyle of aboriginal peoples is threatened" because of industrial GHG emissions.[54] They conclude by explaining that it "is a bit of a leap to conclude that this is the result of fossil fuel use as opposed to, say, the normal cycles of warming and cooling".[55] In one breath, these critics of climate change discount not only the voices of scientists and Inuit, but also the traditional efficacy of IQ to understand and be responsive to its ecological relations.

There are other researchers who take more of a half-way approach to Native knowledge. Based on his indigenous research, Peter Collings highlights one reason why scientists are often wary of and resistant to Native knowledges. He explains:

> Resistance to the possibility of using oral tradition to inform scientific inquiry is perhaps understandable because oral tradition contains two different kinds of knowledge. On the one hand, it contains knowledge about the environment that is inherently useful for survival. On the other hand, however, traditional ecological knowledge is imbued with detailed explanations of the nature of human and environmental relationships, explanations which are eminently useful to indigenous peoples as a means of instructing others in how the world operates and how people should behave as members of a particular society.[56]

These traditional cultural understandings are often seen as less valid by scientists who engage Native knowledges, and even more so by critics of this intercultural methodology. Using the example of an elder's story about caribou migration, Cruikshank similarly explains that though ecological knowledge within the story may be codified and used by scientists and managers in a way that does not confront their own cultural conceptions, the story itself "would be ignored because it confuses rather than confirms familiar categories".[57] She goes on to state that categories "like TEK tend to work with surface features and are inclined to stagnate and to drain the content - and the life - from their categories" distancing "people from lived experience".[58] The result is that even when Native knowledges are accepted, they will tend to be studied through categories of utility and non-utility, or ecological knowledge and tradition which largely confirm Western assumptions. While critics would deny IQ any validity, even the practice of TEK research has discriminated between that which is traditional and thus stuck in the past and that which is ecological and thus appropriate for study, validation and even what Eli described as appropriation.

Moving beyond the cultural limits of this common way of researching IQ is Berkes' description of a postmodern approach where "Western science is but one knowledge system among many, even though it happens to be the dominant knowledge system by far".[59] Recognizing the contextual nature of knowledge, this methodology questions the research tradition of isolating information and using it within foreign knowledge frameworks. In fact, he suggests that the integrity of any knowledge is threatened when removed from its cultural context. This, according to Berkes, means that Native ecological knowledge needs to be explicitly understood as one subset of a larger knowledge system that is as integrally intertwined as science, political economics, religion and environment are in Western culture.[60] Consequently, Berkes asserts that place-based research needs to shift its view "away from expert-knows-best science, and towards accepting indigenous knowledge as a source of knowledge that complements science".[61] This seems much closer to the Inuit way of dialogue.

When applied to the West's climatic uncertainty, much of this postmodern research has focused upon the adaptive capacity of IQ. Exemplary of this research is Berkes and Jolly's engagement of Sachs Harbour community members in a dialogue on climate change that helped them define two components in Inuit adaptation to northern changes.[62] They first identify "coping strategies" which are largely emergency responses to changes of an often short-term nature, such as an abnormal season. With phenomena that are more persistent there are longer-term responses, which Berkes and Jolly define as adaptive strategies. These strategies are "ways in which individuals, households, and communities change their productive activities and modify local rules and institutions to secure livelihoods".[63] Adding another dimension, Krupnik finds that these cultures have to be particularly flexible and adaptive because the natural environment itself has cycles that are of far shorter intervals and greater amplitudes than those found in more temperate regions.[64] These ecological realities privilege those who can adapt to environmental disruptions while being opportunistic in times of abundance. Based on their postmodern research of Inuit northern adaptation, Berkes and

Jolly expand the traditional Western research focus on indigenous ecological and traditional knowledge by identifying five characteristics of IQ.[65] These include:

> (1) mobility and flexibility in terms of group size, (2) flexibility with regard to seasonal cycles of harvest and resource use backed up by oral traditions to provide group memory, (3) detailed local environmental knowledge and related skill sets, (4) sharing mechanisms and social networks to provide mutual support and minimize risks, and (5) intercommunity trade.[66]

Their analysis takes IQ beyond ecological knowledge by recognizing the interconnected economic and cultural adaptations for living in the north. Though some of these adaptive capacities are no longer practiced in the modern context of settled communities, such as mobility, and ecological knowledge has been degraded amongst the younger generations,[67] the continued practice of sharing in a mixed economy that includes country food and the cash economy reveals the continued dynamism of IQ. This postmodern way of participating in IQ dialogues does not deny the existence of economic rationality, but, as will be seen, recognizes that both ecological and economic knowledge can be recycled within traditional Inuit adaptive understandings of multi-dimensional human-nature relations.

Marshall Sahlins explains that anthropologists throughout much of the twentieth century conceived themselves as social scientists working with dying knowledges because of the global impact of Western society.[68] Contrary to expectations, he argues that economic globalization has not resulted in the monoculturing of the world's Native peoples into developmentally inferior Westerners. The more common result has been the proliferation of Native activities that have seen the incorporation of Western technological advantages into subsistence practices. Sahlins finds that research with Inuit is a perfect case study in this process, where the culture has transformed much more than expected "because of the large influx of productive technologies and domestic conveniences", but much less than expected because these technologies have often been "deployed to the subsistence life style and

manipulated through its customary relations of production and distribution".[69] During the workshop, Louis Autut explained that the majority of their limited money is used to buy oil or technology because this is more sustainable for them than buying food:

> We still get some things from the Northern or Coop stores for whatever is needed, but 80% of our money, or maybe even more, is used for gas and oil so that elders can eat more country food.

As Nuttall clarifies, for many Inuit there is an "interdependence between formal and informal economic sectors" which also conflicts at times since "full-time work restricts the time available for hunting and fishing and the casual, temporary or seasonal nature of many jobs does not allow for many households to be self-sufficient and independent of the formal economy".[70] Though the power discord between these two systems can negatively impact IQ, Sahlins' research also made it apparent that the Inuit way of dialogue offers IQ a dynamic ability for adaptively responding to new situations like Western colonization and its present climatic uncertainty. This adaptation presented itself to my climatic thinking in the Chesterfield Inlet participants' desire to engage a more powerful dialogue between IQ and Western research on these northern changes that are so relevant to their lives.

Climate for Sharing

After taking stock of the workshop's dialogues it became clear that what I heard from these participants was distinctly different from the understanding offered by Jaypeetee over an extended period of emails. While a two day workshop could provide a sense of the ecological changes occurring around Chesterfield Inlet and comments on Western research ethics, it was far too short a timeframe to build the trust needed for engaging IQ's traditional view in dialogue on the human-nature relations underlying the West's climatic uncertainty. For a more extended conversation that could culturally contextualize both the workshop discussions and my climatic thinking I continually turned to the insightful emails of Jaypeetee. He consistently

defined IQ as a knowledge-based practice for living in a context of interacting familial, community and ecological relations. As part of his policy research and desire to facilitate intercultural dialogue he developed a model of IQ based on four assumptions.[71] First of all, "the extended family is the primary life support system". Second, each family belongs to the larger social structures of the community and ecology, and as such actions are oriented toward social optimization as opposed to individual self-interest. Third, "the family is the means of transferring knowledge and skills that make sense, and are sustainable in the context within which they arose". Finally, the extended family "is the basic economic unit of society", and that its actions are based on egalitarian sharing where people have the right to food and basic human needs. There are similarities between Japeetee's definition of IQ and the one outlined by Berkes and Jolly, but there is a slightly different orientation. While they both talk of knowledge and resource sharing networks that presuppose a detailed ecological understanding for bioregional living, Jaypeete's focus on the contexts within which skills, knowledge and resources are shared provides a more explicit relational sense of the IQ tradition.

One central aspect of the IQ defined by Jaypeetee concerned its relevance to political economic organization and the networks of sharing which define the community within its broader ecological context. Expanding this view is George Wenzel's research in Clyde River, Nunavut, where he documented *ningiqtuq* as an Inuit term that describes this community's way of sharing resources.[72] *Ningiqtuq* refers to a web of social mechanisms that act to ensure that food and other resources are distributed from the individual to extended families and the broader community. Wenzel explains that *ningiqtuq* primarily describes a social rather than economic process, such that the greatest amount of sharing occurs within the immediate social context of the extended family, and from there radiates out to less immediate relations through activities like communal meals. Adding a complementary though distinct view is Zachariasie Aqiaruq's detailed description of the sharing protocol following a walrus hunt:

> There has always been a distribution system for hunters. It depends on the person that caught the walrus. This is applicable on all walrus hunts no matter what kind of hunt. The ones that made the kill got the fore-flipper section and the ones that did not make the kill received the chest section. Those who came in afterwards would get the hind flipper section. The hunters that made the kill would get the areas that had more meat in them as their share of the catch.[73]

Rather than being conceived as a system of generalized reciprocity, Wenzel defines *ningiqtuq* as a socially complex economy that consists of balancing reciprocal relations through a knowledge system for inclusion and sanction. These formal and informal rules of sharing are ultimately grounded in the Arctic's ecological reality, as described to Arlene Stairs by the elder Betsy Annahatak: "The North cannot be lived by one person".[74] Inuit economic sharing and dialogue that radiates out from familiars can be understood as adaptive responses to what Krupnik already described as the north's "natural cycles that are of far shorter intervals and greater amplitudes". In a world that is always changing it makes sense to be sharing knowledge, food and relations. The West's climatic uncertainty merely heightens the precariousness of such a world, and thus calls my climatic thinking into an intercultural dialogue on this Inuit adaptive sharing instinct for northern living.

The first thing I needed to recognize was that this instinct is a rational economic adaptation to an uncertain world, as well as a practice that is meant to imitate a cosmicological sharing principle. Jaypeetee states that "sharing and reciprocity are matured traits of a socialization process that is diametrically opposed to the individualistic market economy in that it works with nature to produce something spiritual".[75] David Pelly helps provide insight into some of the spiritual dimensions of sharing as it relates to IQ hunting:

> Traditionally, the hunt is the pact between Inuit and the seal. The Inuit hunter is not extracting from the environment but creating a bond between his people and their environment. When the seal gives itself to a hunter, it is an act of sharing in which the

seal is transformed from animal to human. Being consumed is a form of rebirth or renewal for the seal.[76]

The act of sharing re-produces the spirit of what Nuttall refers to as the "giving cosmos", and this approach reflects a vastly different law of nature than that which fuels a Western economic rationality that internalizes Native ecological knowledges as a response to its own climatic uncertainty.[77] Nuttall's research led him to conclude that for northern Native peoples "animals and all other aspects of the natural world, such as lakes, rivers, the sun, the moon etc., have souls, just as humans do".[78] Sharing with "animals and natural phenomena... reminds human beings that they are not unique, but are part of a transcendent universe in which everything emanates from the same spiritual source".[79] As other researchers of hunter-gatherers have found, close daily contact with other beings provides experiences of being involved in sharing relationships that have economic importance and spiritual depth.[80]

Analyzing Sahlins' seminal essay on the original affluent society,[81] Nurit Bird-David explains that "in drawing attention to the explanatory power of hunter-gatherers' trust in their environment" this anthropologist offers "a culturally oriented theory of hunter-gatherers' economic behavior" that is built on the affluence of nature's social abundance.[82] Following Sahlins' lead to a view that critically prioritizes the spiritual dimensions of these economic acts, Bird-David finds the affluence of hunter-gatherers to be predicated upon a cosmic economy of sharing that includes the human and ecological communities. Contrasting a Western economic rationality that is concerned with maximizing value in a world of scarcity, the hunter-gatherers assume a social abundance that has a similar cultural pervasiveness.[83] In viewing the human community and natural environment as sharing partners, this hunter-gatherer cosmology "implies that as human agents appropriate their shares they secure further sharing".[84] Economic acts of sharing and the IQ way of dialogue can be understood as a mutually constituted response that resonate with the north's cosmological patterns.

As an alternative to the prevalence of economic rationality in environmental thought, Rogers also analyzes forms of sharing exchange in the anthropological and philosophical literature on the gift economy.[85] In many ways his analysis of the gift parallels IQ, especially in its "recognition that gift exchange is not separated from other activities in society".[86] This is a basic challenge to a market economy that structurally separates itself from other social institutions so as to be objectively self-regulating. In terms more familiar to market economics, the social embeddedness of a cosmic economy challenges the assumed position of objectivity from which the Western political economy internalizes people and nature as resources and services, and Native knowledges as means to continuing that end. Contrasting this approach that limits the effectiveness of IQ dialogues on the West's climatic uncertainty, the cosmic economy of gift exchange is primarily concerned with social relations, including all of the positive and negative aspects that interconnect the human to a cosmology of animal, vegetable, mineral and divine forces.[87]

This sharing cosmos is revealed in Inuit oral mythologies and histories that nurture a worldly respect which is the basis for the ecological knowledge reflected in the words of elders and hunters. While the ACIA notes that "mythologies, vivid oral histories, festivals, and animal ceremonies illustrate the social, economic, and spiritual relationships that Indigenous Peoples have with the arctic environment",[88] this brief reference is the only step the report takes into what Native cultural traditions can offer research on the West's climatic uncertainty. No indigenous cultural understanding is further documented within the report's scientific frame of reference which largely utilizes Native knowledges to document and confirm Western views of ecological changes and project possible adaptation scenarios. This is the process of Western research that led Eli, Louis and others to be critical of the lack of real substantive dialogue.

Responding to the claim that this Native conception of a sharing cosmology typifies a Western romanticism, Cruikshank states that in a worldview "where animals and humans

share common states of being" there is a "mutual responsibility" for maintaining this shared world, and "social relations are rarely straight forward".[89] Clarifying the complex reality of these northern social relations, Krupnik's research with the Asiatic Eskimo makes the point that at the beginning of the twentieth century there is evidence of "excessive natural resource exploitation" which calls into question the romantic view that "traditional Arctic maritime hunters" could not destroy "the ecological balance of their environments".[90] There is a substantial body of research which rightly questions the validity of this romantic assumption of Noble Indian cultures in a perfect ecological balance that is sustained until the arrival of Western culture.[91] Even the environmentalism of the ICC is, according to Nuttall, conflicted by a romantic sensibility that constructs the north "as a fragile environment under threat from advanced industrial states lying far to the south", thus implying that Native people have a certain wisdom for preserving "the value of wilderness in the modern world".[92] Since the issue of romanticism in relation to an Inuit cosmic economy and way of dialogue is important for clarifying my climatic thinking on the West's uncertainty, Renée Hulan's discussion on the problem of Canadian romantic views on the Inuit deserves a short digression.[93]

Hulan critiques non-Inuit writing on the wild north – like that of Barry Lopez' popular *Arctic Dreams*[94] – as being too preoccupied with two romantic elements of Inuit experience that are also the focus of this story's IQ dialogue. The first assumes Inuit have access to the Stone Age past as a "pre-contact-traditional" hunting society, and the second concerns access to an "exotic spirituality".[95] Contrasting that sharing dialogue which is described by Inuit like Jaypeetee, the common tendency of these Western writers is to focus upon "masculinist images of the hunting society and how it functions".[96] Hulan makes the case that for many Canadian writers "Inuit have been imagined as ideal Canadians, as those who can pass on the 'autochthonous claim' to both the land and the north".[97] As with the dialogue presented here, her research on Inuit self-representation reveals a contextualized definition of the individual as simultaneously "identified with the rest of the community" rather than embodying a rugged

individualism central to much Western thinking.[98] What the Inuit self-representation makes clear is that the romantic northern writing hero is continually fleeing northward into "a perfect solitude, a perfect separation from social bonds, a rupture with the social contract, which, just like an ideal masculine identity, can never really be".[99] More generally, she makes the strong case that this prevalent feature is the "Romantic national consciousness" of a Canadian nation that likes to view itself as "similarly rugged and individualistic or, negatively, lacking and needing an understanding of its true nature as rugged and individualistic".[100] Almost paralleling this romantic dialectic is Western research of northern changes that simultaneously presents a dominant individualist economic rationality, and an engagement of northern knowledge that can maintain its climatic uncertainty. Hulan's analysis resonates with the ICC, Jaypeetee and Chesterfield Inlet to reveal a northern changing reality where rugged individualism and the divisiveness of economic rationality are the basis of Western romantic delusions that do not work. While the West's economic rationality romanticizes individual self-interest as the answer, in a giving cosmology the focus is on how to mediate those relations in a way that attempts to respect shared realities. As Jaypeetee clarified, social optimization as opposed to economic maximization is IQ's focus.

There is much in common between IQ's sharing cosmos and the biospheric vision proposed by Daly and Cobb as a means to deal with this Western economic fallacy that manifests in relation to environmental issues and Native knowledges. They suggest that many scientific disciplines, like climate science, reveal a biosphere consisting of an "internal relatedness" that "forbids thinking of it as composed of self-contained individuals".[101] This view is of a social cosmology where the "biosphere is a society, or rather a society of societies".[102] For these authors, a blending of science with Western religious understandings provides the basis for a biospheric vision that "is richly inclusive and transformative of human perceptions".[103] The indeterminate reality of the West's climatic uncertainty suggests that a viable response to this economic rationality will depend upon its contextualization within

cultural understandings that can engage Western science in dialogue. IQ's critique of Western research adds that a response to changes in the climatic hierarchy should be less concerned with increasing ecological knowledge, and more concerned with fostering those cultural adaptations and spiritual understandings which can embed the West's economic rationality within a sharing cosmology. As with the Inuit adaptive way of dialogue that shares spiritually contextualized ecological knowledge for northern living, Daly and Cobb's research suggests that contemplating a response to IQ understandings of the West's climatic uncertainty will require my climatic thinking to synthesize political economy and science with cultural history and religion.

Nunavut's Sharing Cosmology

In 2004 the Commissioner of Canada's Nunavut territory, Peter Irniq, spoke in Rejkjavik, Iceland about how even if Inuit had "never been introduced to the Southern culture we would still feel the effect of their energy consumption".[104] While Irniq clarified that Inuit understand the lure of this technological power for it has allowed many to move from *qulliit*, oil lamps, that were fuelled with animal fat "to the high efficiency of central heating and light", he was concerned that over-consumption will seriously impact Inuit lives.[105] Concluding his talk on climate change, he stated:

> We are a people of the land and one of our mandates within our new government and the surrounding organizations is to protect that land. We need to conserve its beauty and respect its generosity, using it wisely to insure the survival and pride of many generations to come.[106]

Here again is displayed the land's cosmological generosity that leads Inuit to their own way of dialogue, as reflected in the ICC petition, the hunter's sharing cosmos and the words of Jaypeetee and Chesterfield Inlet. This seemingly Inuit instinct for northern living also manifested in the political economic creation of Nunavut within Canada.

In 1982 a plebiscite based upon the proposal of the eastern Inuit political leadership to divide Canada's Northwest Territories was voted upon. The result was "a record high-voter turnout and a four to one margin in the east in favour" of creating the new Inuit territory of Nunavut.[107] This northeastern Canadian territory, whose name means "our land" in Inuktitut, became an official political body on April 1, 1999. While the Canadian history of dispossessing and coercing Native groups has created the groundwork for what are often antagonistic intercultural relations, J. R. Miller states that it is striking "that one of the smallest and most recently organized groups, the Inuit of the eastern Arctic, have been the most successful in pursuing their agenda".[108] In examining the strategy that has given Inuit greater control over their political voice, Miller finds their leaders "couch their analysis and proposals in low-key terms" while portraying objectives as being "compatible with existing Canadian political norms".[109] This approach was clearly displayed when Nunavut's "proposal was attacked as creating a 'nation within a nation,'" with the leaders disarming "critics by saying, on the contrary, the Inuit simply wanted into the Canadian political family".[110] Concluding his thoughts, Miller explains that "The genius of the Inuit strategy has been that it enables southerners to see Inuit victory as a triumph that does not represent a loss for the rest of the country".[111]

Unfortunately for Nunavut, Chesterfield Inlet and the ICC, the Western movement towards intercultural sharing of cosmological views on the West's climatic uncertainty has met with limited success to date. IQ's dominant conceptualization in research as ecological knowledge sums up the vestiges of a Western paradigm that judges between that which is of value and that which is valueless. Ecological knowledge provides researchers with local data that can fill in the gaps not easily addressed through Western science or market economic models concerned with internalizing externalities. Simultaneously, all the spiritual cosmologies, economic practices and oral stories are lumped in the category of tradition - that which is irrelevant to a rational valuation of the world. This story of IQ dialogues suggest that

Western research assumptions, like economic rationality, which limit the inclusion of Native knowledges will have to be confronted, as Smith does in her re-visioning of research as a sharing of knowledges. Such an Inuit challenge resonates with the disruption of the West's climatic uncertainty, making apparent the inextricable relation of Western science and political economics to the climatic hierarchy. This gap in understanding is the West's long lasting "traditional stupidity" that manifests a climatic uncertainty in the north which the IPCC and ACIA project will make Inuit into Rogers' "newly stupid".[112] Because of this dynamic interaction, it is important that all traditional understandings be included in any critically respectful climatic thinking of IQ dialogues that are concerned with responding to the West's climatic uncertainty.

At the end of their analysis of the gift, Rogers and his co-authors ask what does "an economics of abundance look like?"[113] In as much as IQ's sharing instinct and the analysis of gift exchange coincide, Inuit traditional understandings would appear to have something important to contribute in defining an abundant cosmic economy. By bringing that which is obscured in Inuit tradition - such as the mythological story of *Sedna* and Her relation to climatic animal changes, Chesterfield Inlet stories about colonial contact, and the multi-dimensional meanings of the Inuktitut term *Sila* which partially translates as weather - into dialogue with my climatic thinking, this act imbues IQ's ecological knowledge with critical cultural understandings that offer a wider spectrum of responses to the West's uncertainty. While these stories of dialogue bring forth mutually constituted responses that are unique to Nunavut's bioregion and Inuit culture, they also provide some general intercultural thoughts for my hermetic act that attempts to embed Western political economics and science within traditional cultural and religious views of the climatic hierarchy's cosmological sharing.

6 ᐊᖏᔪᓇᓯᖏᓂᖅ ᓴᖅᓇᐅᑉ ᓯᓚᒍᑦ ᐅᒪᔨᑦ ᖃᓄᐃᓕᓴᕐᓚᐊᓂᖏᖅ
Hunting Sedna's Climatic Animal Response

ᐊᑦᑕᓇᖅᑐᑦᓯᖏᓐᓄᑦᔪᓕᐊᑎᒋᔭᖏᑦ ᐃᓄᓴᐅᑦ
The greatest peril of life lies in the fact that
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human food consists entirely of souls.

Ivaluardjuk, speaking to Knud Rasmussen in 1920s

ᐅᕐᖅᐅᓯᓗᔭᐅᕙᓚᐅᕐᖅᓴᖅ ᓴᖅᓇ ᕐᐊᕕᐊᓯᖏᓂᖅᓱᓐᔪᓂᖅᑕᐅᕙᑦᑐᓂ
It was said that Sedna was most happy when her hair was tidy,
ᓄᓇᖏᑦ ᐃᑦᓪᓕᐃᖅᓯᒪᔭᕐᓇᒪᒪᓕᑦ, ᑭᓯᐊᓂ ᑭᓯᐊᓂ ᐸᖅᑭᖅᓴᖏᓂᓯᑎᓄᑦ
but she had no fingers with which to comb it.
ᐃᑦᓪᓕᐃᑭᓇᖏᑦᓪᓕᒪᓄᑦ. ᑕᐃᒪᐃᓂᕐᒥᓄᑦ ᓄᔭᕐᐱᓪᓕᖅᑕᕐᓂᖅ ᐱᑎᐊᖅᑕᑕᑭᓂᕐᕋᐃᒪᒪᑕ
So when her hair became figuratively tangled with the
ᐃᓄᐃᑦ, ᐊᒪᒪ ᓂᓇᖏᓂᖏᓚᓄᑦ ᖃᕈᒪᓇᐅᓂᖅᓴᐅᓪᓕᖅᐸᕐᓗᑎᒃ ᐅᒪᔨᑦ
misdemeanors of Inuit, and her anger led to a decline in the
ᐱᓇᓯᔪᓇᖅᑕᖏᓐᓄᑦ, ᐊᖏᓚᐅᑯᖅ ᑕᐃᒪ ᐅᐸᔪᑎᖅᓗᐊᖅᑲᓪᓕᖅᐸᓪᓕᐅᖅᓴᖅ
number of her animals released to the hunters, the shaman had to
ᐊᖏᓕᕋᖏᓚᓄᑦ ᐃᒪᐅᑦ ᐃᖅᑲᖏᓚᓂ.
pay a visit to her dwelling on the sea bottom.

David Pelly 2001

ᐊᓵᑎ ᑭᖏᔪᓪᓕᖅᐸᓪᓕᐅᑎᒃᓴᐃᓇᓇᖅᑐᑦ, ᐊᒪᒪ ᐃᓄᖅᑲᑎᑎᑦ
Nature has the last word, and humanity's
ᒪᓕᓕᐊᖅᑲᖅᓴᑦ ᑕᒪᑐᖏᓚ ᓯᓚᑐᓂᕐᒥᓱᒃ.
obligation is to reflect that wisdom.

Jaypeetee Arnakak, September 30, 2005 email

There is an Inuit story of an ancestral woman who is thrown out of a boat, sinks to the sea's bottom and in this numinous abyss becomes the *Mother of the Sea*, the one who controls all the animals. She is known by many regional-specific names such as Nuliajuk, but she is most commonly referred to as Sedna. Jaypeetee explained to me that Sedna means "the one down there" in the deep waters, and that speaking of Her in this way is an alternative to speaking Her proper name which, in IQ, is considered improper etiquette in reference to an elder.[1] This issue of etiquette is important for in Sedna stories it is often improper human actions which cause an offence that has serious repercussions for Inuit. As the elder Naalungiaq told Rasmussen early in the twentieth century, Sedna is "the most feared of all spirits, the most powerful, and the one who more than any other controls the destinies of men".[2] When offended Sedna can change the weather, increase winds, bring forth a blizzard and, in Daniel Merkur's words, "make the animals disappear so that people go hungry and cold".[3] Today Sedna appears to be responding to the West's climatic uncertainty by making hunting increasingly difficult for the Chesterfield Inlet workshop participants who noted an increased frequency of storms, unpredictable weather, extreme hot and cold days, and a decade of general warming that is impacting the behavior of many animals. Declining water levels in rivers and lakes has affected the arctic char population. Insects, birds and mammals have been migrating northward from the tree-line, with one hunter recently killing his first grizzly bear. Industrial warming has also reduced the length of time that waters remain frozen, impacting the hunting of seals and increasing the frequency of polar bears around the community. These animal changes that are making hunting around Chesterfield Inlet more precarious guide these IQ dialogues on the West's climatic uncertainty to stories about the often feared Sedna.

While the traditional Inuit hunting way continues to provide significant insight on Sedna's northern animal changes, climate scientists have recently arrived in the north by also following the changes in animal movements. The ACIA states that climate change will significantly impact northern wildlife due to a "loss of habitat and forage bases", "increased risk of disease", "increased pollution", "increased competition as temperate species expand their ranges northward, and impacts due to increased human traffic and development".[4] These large animal shifts are characterized by the IPCC as climate change's "canaries in the coal mine" since northern animals provide "an important early indicator of how ecosystems might respond to the discernible human impact on climate".[5] Research on past warming events offer the projection that individual plant and animal species will move northward with the boreal forest as its range is extended into the tundra region.[6] Warming temperatures may also shift ecological processes in a way that provides "opportunities for disturbance-loving exotic species to colonize and spread".[7] In 2003, *Nature* published an article which documented the global nature of the poleward movement of animals through statistical analyses of "studies covering more than 1,700 species globally".[8] This research consolidation found species to shift their range "6.1 kilometers toward the poles per decade" as spring events arrived "2.3 days earlier per decade", all of which had "a statistical level of confidence above 95 percent".[9] Since these animal shifts are a greater threat to biodiversity "than any other single human impact except land use change",[10] the IPCC also expresses concern about whether climate change will "enhance or inhibit these losses in biodiversity".[11] Inuit traditional stories add to this Western view a concern that Sedna may be involved in these losses.

The elder Naalungiaq explains that almost all taboo is directed towards Sedna because of the great power She holds over humanity. He states that these rituals of forgiveness are only offered "in the dark period while the sun is low, and it is too cold and windy on earth; for then life is most dangerous to live".[12] In retrospect, it is appropriate that I arrived in Chesterfield

Inlet during the month of October, for Jaypeetee explained to me that this is the time of the year most often associated with Sedna:

> October is a time of scarcity, a time of transition from water to ice. It is a time of hunger and Sedna is connected because shamans would be earning their keep this time of year when the sea becomes too choppy to hunt sea mammals safely… Sedna is a powerful psychological concept that maintains social order in the bare face of adversity, and is therefore imbued with dark and wet elements.[13]

Another email clarified that there is not a "formal connection between Sedna and October", rather this is the time of year when the *qavaq* or safe ice platform to hunt sea mammals is not present. Personifying a dynamic nature that "is both giver and taker of life", Sedna clarifies to Inuit that no human being or community "can claim control over Nature".[14] Contrasting Sedna's central lesson is a Western knowledge that has as it highest aim the control and management of ecological systems and their goods and services. This view looks upon Sedna as a flawed depiction of an external wilderness that can be managed through a combination of objective knowledge and increasing economic rationalization. As with Latour's introductory critique of the West's internal and external divides,[15] Berkes describes Western environmental management as being caught in a Cartesian separation of culture and nature that is central to environmental problems.[16] He proposes that this dualistic approach, also central to the West's climatic uncertainty, "cannot provide a universal concept of conservation".[17] Sedna's stories suggest an even more radical critique: the global scale of the West's climatic uncertainty is the improper etiquette that has broken a taboo and is today manifesting Sedna's numinous storms, changing weather and animal movements.

Hudson Bay's Mother of the Animals

In the video documentary *Nuliajuk: Mother of the Sea Beasts* elders from many communities re-tell the mythic story of Sedna's origins.[18] Their telling begins with a beautiful

woman named Nuliajuk who refuses to marry despite being of an appropriate age to have children. This angers her father who says that she should marry his lead dog if nobody is suitable. That evening a handsome man enters Nuliajuk's room, and after turning into a dog has sex with her. Pregnant from the affair, Nuliajuk gives birth to half-human and half-dog children that are taken with her to live on an island. The dog-man husband regularly returns to her father's dwelling to get food for the family, but the father gets tired of this arrangement and so plans an accident which drowns the dog-man. When the father brings food to the island he is torn to pieces by the dog children at the request of Nuliajuk. With nobody to bring them food and starvation looming she desperately sends her children away in a water craft. The now isolated Nuliajuk is tricked once more into a relationship with a handsome man who promises to take her from the island. As David Pelly relates the story, this man who "had many dogs and finely crafted hunting tools" offered "her a life of comfort", but when leaving "with him for his land across the sea" she came to realize that her "betrothed was in fact a seabird".[19] With Nuliajuk crying on the sea-bird's kayak, the elders' chorus tells of a miracle.[20] Her dead father is once again alive and hears her anguish. In the rescue attempt he takes Nuliajuk onto his kayak and tries to escape from the sea-bird. Angered by this rejection the bird dives at the kayak and swoops up a climatic storm that makes the sea turbulent. Terrified the father throws Nuliajuk overboard so as to appease the sea-bird and calm the waters, but she hangs onto the edge of his kayak. Pelly then relates:

> In midocean in a small boat, the father feared for his life and, to appease the bird, cast his daughter overboard into the wave-tossed waters. But she clung relentlessly to the gunwale of his boat. Determined to release her grip, the father cut off her fingers at the first knuckle; the pieces fell into the sea and became ringed seals. Still she held on. Then he cut all her fingers at the second joint, and those pieces swam away as bearded seals. Other pieces of her fingers became walruses and whales.[21]

With each finger joint becoming a different animal of this northern land, Nuliajuk descended to the bottom of the sea and became Sedna, both "creation and creator".[22]

This powerful presence that "lives at the bottom of the sea and controls all the animals in her watery domain" is characterized by Inuit as an indweller.[23] While Jaypeetee explained that "an indweller is a personification of a spiritual concept, such as a helper spirit, demons and the like",[24] Merkur offers an interpretation of indweller that helps in bypassing Western religious assumptions about concepts like spirits.[25] His Inuit research led to the conclusion that indwellers like Sedna are numina that "manifest themselves in the miraculous events of the physical world" and, as such, are "more closely analogous to Western concepts of the forces of gravity and magnetism than to concepts of angels, demons, and God".[26] The implication is that Inuit view Sedna as an ecological reality whose animal movements embody spiritual dimensions. Contemplating Sedna's indwelling relation with the animals returned me to the concern expressed in Chesterfield Inlet about the effects climate change is having on hunters. By far their most dominant concern was related to the observation of significant changes in the Arctic char population. Over the course of the workshop Casemir, Elizabeth, Andre, Louie, Bernie and Simionie spoke about the char as an important source of commercial income and diet that is now being impacted by warming waters. Elizabeth offered an assessment that was restated time and time again by others:

> Some fish are dying out from going upriver, the river is too low, the lakes are low, some ponds are empty, there is no water because of the climate change. The weather seems to get warmer every year. There are lots of rivers around this area, and lots of fish try to go upriver and they are dying out because of the low water.

Louie explained that the water has become so low that "you can just take them out of the river without a spear or fishing line", while Andre added that "we can cross rivers with runners that in past seasons we would not even be able to cross with hip-waders". While Bernie explained that the result of this warming on the char has been a change in spawning time from the

"middle of September" to "the end of August", Simionie, Andre and Elizabeth were concerned that the lowered water was resulting in poorer harvests due to more fish dying or being bruised and losing skin while going up river. Supporting these IQ observations is the ACIA's scientific projection that warming northern waters will create less "optimal thermal conditions" for char by shrinking their potential habitat, providing conditions for invasive species from warmer waters, as well as increasing their respiration and thus uptake of pollutants.[27] In Chesterfield Inlet, the concern was summed up by Louie: "The fish are dying because of the low water, so in the future what is going to happen. This is what we want to know".

Char is not the only impacted animal from Sedna's changing waters. Bernie was also concerned that the seal hunt is not offering "as much as a couple of years ago". Seals are an important animal for many Inuit, with Pelly basing his whole book on Inuit around the culture of the seal hunt.[28] While IQ suggests that the seal is becoming more difficult to hunt, the ACIA states that ice-dependent seals, like "the ringed seal, ribbon seal, and bearded seal, are particularly vulnerable to the observed and projected reductions in arctic sea ice because they give birth to and nurse their pups on the ice and use it as a resting platform".[29] In contrast, seals that do not require ice, such as harbor and grey seals, are more adapted to temperate waters, thus these changes may extend their ecological niches.[30]

While Nuliajuk's descent into the sea would seem to limit Sedna's power to water-based animals, the elder Naalungiaq made it clear that She is also "mistress of everything else alive, the land beasts too, that mankind had to hunt".[31] One informant of Rasmussen told him that Sedna "is everywhere, not only out in the sea, but in the interior too, where she may suddenly emerge out of the ground or up out of the lakes".[32] Just as the seals traverse between the sea and the land, so does the indwelling power of Sedna in Her animal responses to the West's climatic uncertainty. Exemplary of this is the IPCC projection that many species including marine birds, tundra birds and polar bears will be impacted, while caribou may be effected by "increased temperatures, snowfall, and potential shifts in the timing of

precipitation".[33] In Chesterfield Inlet, the polar bear was the most talked about land animal, though in comparison with the char and seal the focus was quite different.

Both Andre and Simionie said that with the warming temperatures there has been an increasing frequency of polar bears around the community and hunting camps. Andre spoke of staying up all night at his camp and leaning up against a door to keep out a hungry bear. He also compared his childhood memory of only seeing "about three or four a year" with a present that has them "crawling all over the country". Assessing the situation, Andre stated:

> The biologists say that our polar bears are disappearing, but once again they are wrong. We have polar bears, especially in Chesterfield Inlet, all year round, especially in the summer months. We have to chase them away, and yet they are hanging around. They are affecting those of us who are trying to make a living commercial fishing because... we can't go fishing when the polar bears are hanging around the camp all summer long.

Based on his role as the local *Hunting and Trapper Organization's* President, Simionie offered insight into the Canadian politics of this problem by highlighting that "you need polar bear tags from wildlife [officials] to hunt them", and these have not been forthcoming. So while Sedna's response to the West's climatic uncertainty manifests increasing numbers of polar bears in a way that impacts Inuit safety and hunting, their hands are politically tied.

One reason for Canada's restraint of the Chesterfield Inlet request to control the polar bear population through hunting may be due to the science's projected impacts of climate change on these animals. Like Inuit who need a good *qavaq* to hunt sea animals, polar bears are largely dependent "upon good spring ice conditions" for seal hunting as family groups.[34] The observed and projected change to sea-ice that is impacting ice-dependent seals is also bringing to polar bears "potentially devastating consequences", with the ACIA stating:

> Polar bears are unlikely to survive as a species if there is an almost complete loss of summer sea-ice cover, which is projected to occur before the end of this century by

> some climate models. The only foreseeable option that polar bears would have is to adapt to a land-based summer lifestyle, but competition, risk of hybridization with brown and grizzly bears, and increased human interactions would then present additional threats to their survival.[35]

People from Chesterfield Inlet have already seen the grizzly bear's approach. Elizabeth stated that "we see the brown bear, it is coming", while Andre said that the year before he was out hunting for a bear just north of the community "and instead of catching a polar bear" he "caught a grizzly". In all their years of hunting, this was the first time any of the participants had seen a grizzly bear in this area. The pressure of these ice and land changes would seem to be resulting in polar bears trying to access food around human communities.

Northward migrating forests, insects and animals offer two distinct perspectives on climate change as opportunity and dead-end. While the grizzly bears and grey seals come north with a supportive climatic ecology, the polar bears and ice-dependent seals struggle to apply their ice-based adaptations to a quickly receding ecology. Paleoclimate history is filled with examples of natural climate shifts that brought changes in the regional composition of species due to a combination of migration, adaptation and extinction.[36] Though this history offers insights on animal migrating adaptations to past climatic changes, the cultural features related to the West's climatic uncertainty makes for a new situation. In contrast to the most recent Ice Age when "many species survived by migrating to appropriate habitats", such adaptations are today "much more difficult because they would entail migration across freeways, agricultural zones, industrial parks, military bases, and cities of the twenty-first century".[37] Some of the greatest migrating species that will have to deal with these civilizing blocks that are intertwined with the West's climatic uncertainty are birds. The IPCC indicates that bird ranges have generally moved poleward,[38] and Root and Schneider state that "significant changes were found for nearly all birds", with most moving northward or up mountain slopes.[39] In a warming world birds that cannot adapt will be at risk for extinction,

and those that migrate great distances and require various seasonal habitats will be especially vulnerable.[40] For the Chesterfield Inlet participants the major concern about birds was voiced by Andre. In the spring people go to various islands to gather the eggs of birds and water fowl, but when they went recently "there were no eggs and it was long before time". Andre proposed that "there was no time for them to lay the eggs because of the changing weather".

For Western climatic thinking to follow these animal responses into the story of Sedna requires moving beyond the complementary intercultural ecological observations of climatic thinking and IQ concerning these changing animal patterns to an engagement of IQ's view of nature. Thinking about Sedna, Mircea Eliade explains that She is the "source and matrix of All life" upon whose good will the Inuit are dependent.[41] Jaypeetee wrote that She is the spirit of "nature's largesse", the ineffable abyss that is the "Source of all creation and destruction".[42] In this Inuit story of the West's climatic uncertainty manifesting in the north, Sedna is the ecological indweller holding the animals back from Inuit hunters because Her goodwill has receded with the ice. To engage Sedna's climatic story, I bring climatic thinking that is informed by anthropological and religious scholarship into a dialogue with the IQ of Jaypeetee.

In trying to help me transcend Western assumptions that limit an appreciation of IQ, Jaypeetee asked me to "view ecology, environment and wildlife as sentient beings that are deserving of your respect". Start with this understanding and then, he said, "you will get IQ and other hunter-gatherer spiritualities".[43] Jaypeetee clarified that this animism is a deeper level of thought that "points to a real identification with and relatedness to reality and Nature's wonderful cycles". Continuing this thought, he stated that in IQ "Nature has the last word, and humanity's obligation is to reflect that wisdom".[44] His words suggested that IQ challenges my climatic thinking to be in accord with the animated being of Sedna and Her potentially numinous animal movements.

The "belief held by indigenous peoples that the earth is a living entity" is according to Smith's postcolonial critique the "most fundamental clash between Western and indigenous belief systems".[45] Highlighting this divergence between Western and Native views of animism is the focus of Nurit Bird-David's article on the Nayaka of South India.[46] Drawing from the theoretical research of E. B Tylor,[47] she describes the intellectual process whereby classical anthropology came to use the term animism as a cultural category that attributed life or divinity to natural phenomena such as animals, plants, natural bodies and celestial movements. Bird-David explains that Western researchers assumed the primacy of their own belief in the atomistic self-interested individual and, consequently, viewed Native people as making the mistake of attributing a similar self onto natural others. The result was decades of research dedicated to explaining "why people did it", and defining the historical origin of this "mistaken strategic guess".[48] Tylor thought that religion developed out of this mistake, with it not being until the West's Enlightenment that humanity evolved a science for rectifying this original error. This view that conceptualized animism and science as "fundamentally antithetical" became a primary post-Enlightenment argument against the validity of Native knowledges like IQ.[49]

Contrasting this Western conception of animism as a naïve fantasy in conflict with rational science, Bird-David finds the Nayaka view of an immanent divinity to arise from an experience of the complex social relationships they have with the creatures of their shared environment. After clarifying that Tylor's definition of animism as a mistaken personification of nature was limited by Western assumptions, she concludes that people "do not first personify other entities and then socialize with them but personify them as, when, and because [they] socialize with them".[50] While Western disciplinary objectivity "knows" the world through objectively separating self from a reduced focus of study, the Nayaka practice an animistic or "relational epistemology" that can talk with trees rather than cut them into pieces as a means to knowledge.[51] Instead of knowledge being about "having, acquiring, applying,

and improving representations of things in-the-world", animistic understanding is concerned with "developing the skills of being in-the-world with other things, making one's awareness of one's environment and one's self finer, broader, deeper, richer, etc." so that one can maintain "relatedness with neighboring others".[52] This animism resonates with what Jaypeetee referred to as IQ's "relatedness to reality", a cultural knowledge which patterns itself after the animal movements that arise from the indwelling reality of Sedna.

The animistic cosmos of the Nayaka is not limited to humans, animals and plants, but, as with the Inuit indweller, also engages divine beings known as devaru.[53] Bird-David explains that the devaru cannot be understood using the term "spirits" or "supernatural beings", rather she suggests thinking about them as "superpersons", people with powers that surpass the human range.[54] The devaru mediate the relation between the Nayaka and the other beings of their ecology. Bird-David explains:

> A hill devaru, say, objectifies Nayaka relationships with the hill; it makes known the relationship between Nayaka and that hill. Nayaka maintain social relationships with other beings not because, as Tylor holds, they a priori consider them persons. As and when and because they engage in and maintain relationships with other beings, they constitute them as kinds of person: they make them "relatives" by sharing with them and thus make them persons.[55]

While Bird-David's analysis leans towards a functional interpretation of devaru, it does offer a Western anthropological view on Sedna as being at one with the animals and weather of the north's cold waters, air, land and other elemental powers that can surpass human knowledge. Sedna is not simply a mythical concept, but a relative of bioregional proportions who has the capacity to impact lives in predictable patterns and unexpected ways.

Based on her research with Inuit, Shari Fox describes an interaction that displays this animistic sensibility of familiar relations in the context of northern weather changes.[56] An elder

by the name of Aqqiaruq used the term *uggianaqtuq* in reference to the changing of the weather, so Fox asked her informant Iyerak to clarify what he meant:

> For example, I am very close with my sister. Say I wasn't feeling myself one day and I went to go visit her. As soon as I walk in the room, or say something, she would know right away that something is wrong. She would ask me, "is there something wrong with you"? She would say I was *uggianaqtuq*. I was not myself, acting unexpectedly or in an unfamiliar way.[57]

Offering a similar view from Chesterfield Inlet, Simionie explained that the weather has become very different of late, with changes in what IQ expects both seasonally and daily. Reflecting on daily unpredictability, he stated that "at the start of the day it is really calm and about an hour later it is different. It is off and on, off and on". Meanwhile, Louie looked to the historical depth of IQ when he compared the stories of the weather from his grandfather's days in the late-1880s to today, saying that people want to use IQ but "everything is changing because of the climate change". Clarifying these difficulties, Andre explained that he did not "want to put down IQ because it is our history, it is our culture, its there, it still exists. What I am trying to get at is that it is now hard to predict the weather with IQ". Aqqiaruq's use of *uggianaqtuq* highlights the reality that environmental relations for many Inuit have a felt quality that are of a familiar nature, and with the West's climatic uncertainty there is something just not right in the weather and Sedna's disrupted animal movements.

From the dark bottom of the Hudson Bay, Sedna is now manifesting climatic animal responses which surround Chesterfield Inlet and the north in a numinous uncertainty that confronts Inuit subsistence. While the IPCC estimates that between 33 and 57 percent of Inuit subsistence is based upon local harvesting of renewable resources, both Andre and Simionie stated that the high cost of store bought foods means that approximately 80 percent of the Chesterfield Inlet diet is based on country food. Louis clarified this economic approach:

> We get more country food because we use our money to buy gas, oil and parts for our snowmobile, and this is what we spend our money on. We still get some things from the Northern or Coop for whatever is needed, but most of the money is used for gas and oil. Especially the elders, they eat more country food.

Changes to the weather and Sedna's animals have made this hunting way of life increasingly difficult. While a successful hunt reflects Sedna's benevolence, Pelly relates that the "Mother of the Sea" could be "vindictive when traditional customs were neglected".[58] Her anger at inappropriate behavior is seen in storms that "prevent the hunters from going to sea" and in an absence of animals that are held within her depths.[59] Merkur states that Her stories reveal an indweller that has "the power to send bad weather in winter, forcing the Inuit to remain indoors until they starve".[60] Sedna's animal responses to the West's climatic uncertainty are a deep concern for Inuit because of the potential disruption of their sharing relationship with an ecological ancestor that is central to northern sustenance.

Changing Hunting Rituals

An Inuit elder by the name of Ivaluardjuk told Rasmussen that the "greatest peril of life lies in the fact that human food consists entirely of souls".[61] These souls, in his view, "do not perish with the body", and thus must "be propitiated lest they should revenge themselves on us for taking their bodies".[62] Kidwell, Noley and Tinker explain that this statement points to a world where people have a responsibility to be aware of their actions, to kill carefully so that animals do not suffer and undertake rituals of propitiation.[63] Improper hunting protocols, bragging about a kill, talking while eating or not sharing the catch could, as Ahlooloo reminisced, display a "lack of respect for the animal spirit world" and cause hunger.[64] Animals need to be respected, and if this respect is not forthcoming then the animals will recede from humans. Much research with Inuit suggests that hunting is an activity that has spiritual dimensions which encompass the economics of living. Nuttall describes the hunt as a

reflective practice that brings together "physical features, community history, and mythological events" in a way that provides physical and spiritual sustenance.[65] Supporting this view, Jaypeetee referred to the story of Sedna as a tool that inspires a broad understanding of animals and ecological processes.[66] He explained that IQ's hunting philosophy "is based on empathy and humility, an uncluttered and unhurried mind is absolutely necessary for a successful, merciful hunt".[67] Before returning to Sedna's involvement in today's climatic animal changes and disappearances, it is helpful to contemplate the Inuit hunter's etiquette for living in Her northern spirit ecology. Prior to working with Inuit, Brody spent time with the Beaver Indians of northwest Canada and relates a relevant hunting story.

While out with a hunting party, Brody became bewildered by the constantly shifting consensus concerning where game might be found.[68] He learned that there were subtle variables which were not hard and firm, but rather required a responsive hunting sensibility to a shifting ecology:

> To make a good, wise, sensible hunting choice is to accept the interconnection of all possible factors, and avoid the mistake of seeking rationally to focus on any one consideration that is held as primary. What is more, the decision is taken in the doing: there is no step or pause between theory and practice. As a consequence, the decision - like the action from which it is inseperable - is always alterable... The hunter moves in a chosen direction; but, highly sensitive to so many shifting considerations, he is always ready to change his directions.[69]

Brody continues by contrasting this approach with the planning that is common in Western science, political economics and environmental management, stating that planning "is at odds with this kind of sensitivity" that is aware of the "constant movements of nature, spirits, and human moods".[70] Plans constitute "a decision about the right procedure or action," and in the hunt "there is no space left for a 'plan,' only for a bundle of open-ended and nonrational possibilities".[71] As with my definition of a climatic thinking that mirrors knowledge with

ecology, Paul Shepard suggests that this resonance between consciousness and animals is a human legacy based in a Paleolithic past where the mind patterned itself to the animals that were necessary for survival.[72] He states that in this tradition the surrounding ecology is experienced as "the outward form of the whole space of the mind", with sensory knowledge being consciousness and the "unseen distance" being the unconscious.[73] Reflecting on this resonance between animals and the mind, Shepard concludes that this consciousness aims to "carry us beyond ourselves, pursuing the nature of thought as the thought of nature".[74]

Jaypeetee explained that many Inuit have specific techniques to facilitate this consciousness for a successful hunt:

> My father and grandfather always worked and puttered around with quiet but incessant humming to achieve a sustained low-level trance-state. The solutions, pictures, patterns, relations, come of their own accord to the receptive mind. Inuit women in the old days had this technique whereby solutions to difficult technical problems in sewing and design were constructed through their dreams.[75]

He also related that while he found the idea of meditating in an empty room intriguing, the practice ultimately did not have the same effect as the "trance-like state" he attains when "fishing through the ice",[76] combining "hunting, rhythmic sound, and symbolic talismans", or listening to Sedna's mythic story.[77] His words came together with Brody and Shepard to offer an understanding of northern animals as the "thought of nature", even suggesting that Sedna's storms and animal behavior are Her thoughts that today tell a changing story about climatic thinking in the north.

The Inuit and other Native groups Brody worked with commonly utilized dreams as an intuitive capacity to condense "data that is both voluminous and elusive", and thus attend to "more information than the conscious mind can hold".[78] Dreams are, in his view, a commonly accessible approach for hunters to condense knowledge without requiring a cumbersome "list of pros and cons" that will never be complete.[79] In his words:

> Which facts are most important? The information may not be consistent. Wind changes urge a delay; news of animal movements suggests all possible speed. The weighting of factors is another kind of knowledge... The simple truth about a difficult decision is that its difficulty comes from the irresolvable quality of knowledge. A deep dilemma arises from the way in which accumulation of facts seems not to decide the issue. So what should be done? In the end, there is a need for some other kind of knowledge, some leap of imagination, some way of processing the facts so that they yield a conclusion. This is what dreams do.[80]

He adds the significant point that dreaming is not an activity done in lieu of ecological and historical knowledges, but rather is an additional intuitive practice for "paying the closest and deepest possible attention to the world".[81]

While a deeply aware etiquette can bring hunting success, it is with the eating of souls that Sedna's world of greater danger appears. Nuttall states that Inuit hunters recognize they have a responsibility to ensure "that animals are killed properly and their meat, bones and hide utilized in ways that will not offend the animal's guardian spirit".[82] To facilitate this offering of respect, IQ uses elaborate rituals performed prior to the hunt and after the animal's death.[83] From a Native American intercultural view, Tinker explains that being "part of the whole creation and its balance" means that any violence, including that which "is necessary for our own survival, must be accompanied by an act of spiritual reciprocation intended to restore the balance of existence".[84] It is as if hunters need to be aware of those necessary life-sustaining actions which continually chop Sedna's fingers off by responding to these acts through spiritual reciprocation. A review of diverse hunting rituals documented in anthropological literature led Roy Rappaport to describe "death and killing" as powerful *signs* that are used to produce "trance-like states" which reveal many co-existent, or mutually constitutive, meanings.[85] Ecological knowledge, oral histories, mythic stories, social protocol and dreams inform symbolic signs, such as "blood and semen", that point to the life-death paradox at the

root of hunting and living.[86] Pelly's description of the Inuit ritual of "giving the dead seal a 'drink' of fresh water before the butchering" is clearly in line with this type of sign.[87] In this ritual the seal is taken back to an igloo, as it cannot be performed where the seal was caught. Then, as the elder Analok explained to Pelly, before cutting up the seal "you would get some meltwater from your mouth and pour it into the seal's snout" for it is believed "that a seal refreshed in this manner would be more likely to return again in the form of another seal for another drink".[88] A Caribou Inuit shaman known as Igjugarjuk offered a similar insight on the ritual etiquette needed to ensure an animal's return:

> [Sedna] looks after the souls of animals and does not like to see too many of them killed. Nothing is lost; the blood and entrails must be covered up after a caribou has been killed. So we see that life is endless. Only we do not know in what form we shall reappear after death.[89]

Rappaport states that many diverse hunting rituals commonly point "to the limitations of signification", and thus "constitute attempts to push past representation in all its forms to naked, immediate existence".[90] As with dreams during the hunt, these rituals foster an awareness for considering the cyclical nature of living and the limited human capacity for representing Sedna's indwelling reality.

In the stories of Sedna it is often said that animals which have been disrespected by unaware hunters or inadequate rituals may become "dark or foggy revenge-seeking ghosts".[91] The foggy animal ghosts make filthy Sedna's hair, which then holds the animals back from humans.[92] As Pelly relates:

> It was said that she was most happy when her hair was tidy, but she had no fingers with which to comb it. So when her hair became figuratively tangled with the misdemeanors of Inuit, and her anger led to a decline in the number of her animals released to the hunters, the shaman had to pay a visit to her dwelling on the sea

> bottom. He had to comb her hair and thereby pacify the Mother of the Sea so that she would release the seals to the hunters.[93]

Given the interesting post-colonial designation of "retired shaman", a man by the name of Victor described his visit to Sedna's watery abode:

> At the bottom of the sea She has a house. It's a real house! Only a shaman is able to go there. I can truly say I know Her, Nuliajuk. She doesn't have fins at all. She has legs, just like us. When She inflicts hardships on us, when She withholds Her seals, Her thick hair falls down, holding back the sea beasts.[94]

In Victor's words, Sedna's "fury would bring desperate hunger, terrible storms, a world out of balance, and only a shaman could set matters right".[95] Jaypeetee explained that Sedna is ultimately an "Inuit Shamanist God" or "meditative device intended to assist the shaman in gaining insight", for the "belief in human creativity and imagination to solve or transcend almost any problem is fundamental to IQ".[96] During times of turbulence when a lack of human etiquette is at the root of Sedna's animal disappearances, then the Inuit shaman would enter the story and offer an imaginative ritual response to a spiritual anger that is today increasingly related to the West's climatic uncertainty.

The Inuit ritual that allows a shaman to descend into Sedna's domain is described by Eliade as a community séance that occurs "at an individual's request, sometimes because of illness, sometimes because of bad luck at hunting".[97] At the séance, the shaman begins by breathing "deeply, in silence, before summoning his helping spirits", and then "the shaman begins to murmur: "The way is made ready for me; the way opens before me!"[98] In response, the audience answer in chorus "Let it be so", after which "the earth opens, and the shaman struggles for a long time with unknown forces".[99] After bypassing some of these forces the shaman cries to the gathered that the way to Sedna is open. The group responds by exclaiming: "Let the way be open before him; let there be way for him".[100] It is at this point that the

shaman can be heard to cry "Halala-he-he-he, Halala-he-he-he", which "is the sign that the shaman has set off. The cry grows more and more distant until it is no longer heard".[101]

At the bottom of the sea, far from the gathered people, the shaman confronts obstacles to Sedna that are a result of human indiscretions. There are "three great stones in constant motion barring his road", which if passed leads the shaman along a path to Her house on a hill.[102] Then Her anger is manifested when "a great wall rises before her house", which "the shaman has to knock down with his shoulder".[103] With this obstacle passed, Merkur describes the shaman's meeting:

> At last the shaman finds the Sea Mother, seated with her back to her lamp and to the animals that are gathered around it. These are signs of her anger. As well, her hair is filthy with the misdeeds of Inuit and hangs loose and dishevelled over one side of her face. The shaman takes her by the shoulder and turns her face toward the lamp. He strokes, smoothes, and cleans her hair, as she, lacking fingers, cannot do. In this manner, he attempts to persuade her to release the animals.[104]

Eliade continues his description of this meeting:

> As he combs [Sedna's] hair, the shaman tells her that men have no more seal. And the goddess answers in the spirit language: 'The secret miscarriages of the women and breaches of taboo in eating boiled meat bar the way for the animals.' The shaman now has to summon all his powers to appease her anger.[105]

With the completion of these spiritual tasks, the shaman returns to the séance and after a long silence speaks: "I have something to say". The gathering respond with a desire to hear, and in Sedna's spiritual language the shaman demands all to "confess their miscarriage of their breeches of taboos and repent".[106] It is only through this ritualized communal response to Sedna that balance is restored.

Offering insight into the communal context of this ritual, Jaypeetee explained that IQ's relation with animals and the environment "is built around an elaborate set of taboo systems

we call *tirigusuusiit*".[107] He described these taboos as "ritualized conditions and obligations that kept in balance the social, ecological and cosmological order". Rappaport's review of taboo literature led him to conclude that they are rules about appropriate and inappropriate actions constituted in a kind of cosmological hierarchy:

> At the apogee of this hierarchy stand a limited number of postulates concerning spirits... Cosmological structure is elaborated in a second class, a class of axioms by or through which the spirits postulated are associated with elements and relations of the material and social world... These relations are given greater concreteness and further specificity in yet a third level of understandings constituted of rules and taboos concerning action appropriate or inappropriate in terms of the understandings of the cosmological structure which inform them.[108]

This dissection of cosmology and taboos resonates with Sedna who is at the apogee of this mythic story, while also indwelling in specific animals and places that have corresponding rules to mediate human relations. These taboos are part of an everyday Inuit etiquette that mediates between Sedna's animate being and the power of human actions to consume Her fingers, thus impressing upon people the cosmological limits of human knowledge which occasionally requires the deeper thought of a shaman's ritual.

IQ *tirigusuusiit* sanctify human actions by socially contextualizing the overuse of human power and ensuring that people are adapted to the multidimensional reality they inhabit. In the past, these taboos were related to such occurrences as women's menstruation, food preparation and hunting rituals. While many accounts suggest that these taboos were difficult, and many Inuit have little desire to go back to these specific rules, Jaypeetee indicated that perhaps new *tirigusuusiit* are needed to deal with today's realities. In his vision, these new taboos would be based upon a sharing of Western science and IQ:

> With our great knowledge, scientific insights and technology we should be able to come up with similar *tirigusuusiit*. The development of these living rules should be the

> measure of our collective wisdom. We can't do this through force, legislation and policy, it has to start by beginning to treat each other like thinking reasonable beings capable of taking on necessary and fair social and ecological obligations and responsibilities.[109]

After thinking about the impacts of Western culture on IQ and the response of Sedna's animals, the Inuit elder and philosopher Mariano Aupilarjuk made a similar statement:

> The Inuit system of laws and principles is vast. If its not too difficult in the future, for those studying... I'm not sure what subject - please - let them know it exists. Let even some of it be understood... because in the future the land will need protection, the sky and sea will require care, and we would all then accept the responsibility. That's my every wish.[110]

Just as these Inuit suggest translating *tirigusuusiit*, Rappaport offers a fourth symbolic level that imports current "material and social conditions immediately prevailing in the everyday world" into cosmology and ritual.[111] Since Sedna continually responds to human actions, both the shamanic ritual and everyday *tirigusuusiit* need to reflect today's prevailing climatic realities. The West's climatic uncertainty calls forth Sedna's anger in northern animal movements, thus suggesting that this culture's scientific, political economic and religious plans also need to be confronted in a shamanic ritual on the breaches of taboos.

Source and End of Life

Within Sedna's watery dwelling can be heard a spirit voice answering a twenty-first century shaman's climatic concern: the breach of *tirigusuusiit* in scientists who will not share knowledge and people who look at my being as Goods and Services bar the way of the animals. Sedna calls forth this Western confession by challenging the IPCC description of Her indwelling animals and ecology as *Ecosystems and their Goods and Services*. This title of the IPCC chapter on animals and plants presumes a certain control that can manage animals as

objectified goods for human use, and larger ecological processes as services primarily oriented to the needs of human living. At the top of this Western cosmological hierarchy are humans that utilize economic ingenuity to manage a world of individually oriented self-interested actions. These behaviours that deny Sedna's indwelling power are represented in a denial that improperly treats animals as resources, and thus surely bear the signs of unheeded *tirigusuusiit*. Not surprisingly, animals have been receding from these Western actions for decades, even centuries, with its climatic uncertainty merely extending these animal disappearances into Sedna's dark northern waters.

The twentieth century is, as McNeill explains, in the early stage of "a mass extinction, the likes of which have occurred five times since life on earth began".[112] Past "extinction spasms" include the largest event that saw the loss of "nine-tenths of marine species" some 245 million years ago, and the more recent dinosaur extinction of 65 million years ago.[113] The current "extinction spasm" has seen "484 animals and 654 plants" disappear since 1600, with much of the damaging behavior occurring during the past century which saw about "1 percent of the birds and mammals" enter into the world's dark depths. According to the IPCC, "25% of the world's mammals and 12% of birds are at a significant risk of global extinction".[114] Research also projects between a 30 and 50 percent disappearance of terrestrial species "in the next century or two".[115] The IPCC continues its assessment by stating that without a significant management effort "there is high confidence that rapid climate change, in conjunction with other pressures, probably will cause many species that currently are classified as critically endangered to become extinct and several of those that are labeled endangered or vulnerable to become much rarer".[116] If this happens "it will be the sixth greatest extinction ever in earth's history", an event that is "far faster than any previous one, and unique in its cause".[117]

The IPCC's response to the potential impact that climate change could have on this desperate situation partly entails the extension of economic rationalization to more natural phenomena. In its words, the loss of "species can lead to changes in the structure and function

of the affected ecosystems, as well as loss of revenue and aesthetics".[118] Later on the report clarifies that there are difficulties that need to be overcome in this necessary rationalization of nature:

> Though difficult to measure, nonmarket values must be taken into account in discussing the state of wildlife. These values can be described in terms of the cultural, religious, scientific, and aesthetic importance of wildlife species... At times, monetary value can be assigned to nonmarket aspects, such as a tourist's willingness to pay to see wildlife in natural habitats.[119]

With the progression of the West's climatic uncertainty and the proliferation of threatened and endangered species it is projected that the cost of protecting animals will also increase. Despite the palpable concern the IPCC has about these changes, it offers little critical awareness that this economic logic may be deeply intertwined with the northern animal ghosts that are now dirtying Sedna's hair and calling for an Inuit shaman ritual. McNeill notes that while the cause of previous mass extinctions are still inconclusive, "the modern one - if it is that - is different in that its cause is obvious: a rogue mammal's economic activity".[120] Jaypeetee offered an IQ critique of this situation by proposing that economic maximization is a kind of cultural machine that works "well with maximal settings because they're simple and linear," but that in a world of ecological realities it is toxic "for living breathing forms".[121] Considering the alternative of sustainable development, Jaypeetee stated that from the view of IQ it would first require "a complete reframing of the current formal economic system".[122] Rather than focusing on monetary profit as the absolute bottom line in the definition of development, he explained that development will have to be based upon "the level of a culture's integration into its particular ecological context". Contrasting a Western denial that allows national, corporate and individual self-interest to primarily define the political economic response to climate change, these IQ dialogues suggest that Western science and political economics requires ritual lessons

in *tirigusuusiit* – a kind of methodological etiquette – that can respond to Sedna and the many other animated bioregional ecologies of the climatic hierarchy.

At the end of his analysis, Rappaport clarifies a postmodern Western science that can relate with contemporary environmental uncertainties by dealing with this missing etiquette.[123] He begins by explaining that science's struggle with the issue of human "participation in the world" will make it become "an order of epistemology and action" that brings together "those who seek to discover natural law and those who seek to understand the nature of meaning and its fabrication".[124] This increasingly mutually constitutive and participatory science will, in Rappaport's opinion, have to recognize the importance of religious representations and ritual practice:

> I long ago argued that in a world where the processes governing its physical elements are in some degree unknown and in even larger degree unpredictable, empirical knowledge of such processes cannot replace respect for their more or less mysterious integrity, and it may be more adaptive - that is, adaptively true - to drape such processes in supernatural veils than to expose them to the misunderstandings that may be encouraged by empirically accurate but incomplete naturalistic understanding.[125]

Rappaport also argues that today it is exactly these types of misunderstandings that are at the root of "desertification, ozone depletion, species extinctions, atmospheric warming and the social and political disruptions following upon such environmental degradation".[126] While the effects of past indiscretions were largely bioregional in nature, the scale of today's environmental degradation is related to the globalization of a Western self-interest that has no restraining *tirigusuusiit* or cosmology. The result is a climatic disruption of animals on global and local scales. Jaypeetee found there to be something in the controlling impetus of Western knowledge that is problematic when considered in relation to the ecological realities of this world:

> IQ is not unfamiliar with control, and it'd be irresponsible of me to suggest otherwise. No society or individual is possible without them. In IQ, respect for others is shown by allowing everyone the full degree of socially sanctioned freedoms they're entitled to. IQ also believes that one learns by trying out and experimenting with one's abilities within reason. But the commonality that I see in indigenous knowledges is a participatory way of noticing and responding to subtleties, as opposed to imposing an ideal and controlling the myriad 'deviancies' that arise from this act.[127]

While the controlling power of Western science brings great knowledge and technologies to the political economic management of the global environment, IQ suggests that the West's sureness in its universal objectivity intertwines that same global order with today's unplanned changes in the climatic hierarchy. From this view, Sedna's animal responses to the West's climatic uncertainty are primarily directed at its lack of a cultural etiquette, or taboos, for relating with the natural and spiritual context which surrounds the use of human power.

Back in the shaman's séance, the ritualistic confession of the West's ecological breaches allows for an evolving intercultural relation with IQ that could perhaps better respond to Sedna's climatic animal movements. IQ offers Western culture and my climatic thinking a practical spiritual lesson in attending to animate subtleties and recognizing cosmological discord between those cultural assumptions which inform the West's climatic uncertainty and bioregional responses of the climatic hierarchy. The numinous potential of Sedna's animated movements requires my climatic thinking to transcend the West's re-assuring assumptions by embracing an etiquette which, in Jaypeetee's words, "venerates nature as the source and end of life".[128]

7 ᑎᑭᐅᑎᓴᓕᓪᓕᐊᓂᖅ ᐃᓄᐃᑦ ᖃᐅᕆᒪᓗᑐᖃᖅᓯᓄᑦᑲᓕᐃᑉᓗᓕᕆᐅᑐᑦ ᓱᓕᐃᓕᓪᓕᐊᓂᕐᒧᑦ

Warming up to an IQ-Christian Apocalypse

ᐱᑕᖃᓕᐅᖅᓱᒪᓕᐅᖅ ᓱᓕᕐᔪᐊᖏᓐᖅ ᓱᓕᓂᓐᓴᓂ ᒐᖅᓱᒪ, ᐊᒻᒪ ᑕᐃᖅᓱᒪᓂ ᓄᓇᖃᓕᐅᖅᓱᒪᓕᐅᑦ
There was once a world before this, and in it lived people
ᐃᓄᐃᑦ ᐃᓅᖃᖅᑎᑭᓐᓂᕐᑕᕐᓂᑦ. ᑭᓱᐊᓂ ᑐᓐᓂᒪᕕᓐᓂᑦ ᑕᐃᖅᓱᒪ ᓱᓕᕐᔪᐊᔨ ᐅᕙᑭᐊᓕᐅᖅᓱᒪᒻᒪᒪᑕ,
who were not of our tribe. But the pillars of the earth collapsed,
ᐊᒻᒪ ᓱᓇᓕᒫᑦ ᓱᕆᑐᑐᐊᔪᓕᓐᓄᑦ. ᐊᒻᒪ ᓱᓕᕐᔪᐊᖅ ᓱᓇᑕᖅᑭᓐᓂᖅᑐᓂ. ᑕᐃᒪᒍᖅ ᒪᕙᖅ
and all was destroyed. And the world was emptiness.
ᐊᓐᔪᑎᑦ ᐱᑭᓕᐅᖅᓱᒪᒃᓄᓐᓄᑦ ᖃᐅᑐᓱᓂᐊᕐᓕᒥᑦ ᓄᓇᒥ. ᐃᓅᓕᐅᖅᓱᒪᕙᓪᓕ ᐊᒻᒪ
Then two men grew from a hummock of earth. They were born
ᐱᑭᑕᐅᑎᑦᒃᓄᓐᓄᑦ. ᐊᓐᓴᖏᓪᓕᒫᑦ ᐱᓱᕕᒫᑦ ᐊᓱᑭᖅᑎᑕᐅᓕᐅᖅᓱᒪᓕᐅᖅ ᐱᖃᑕ ᐊᕐᓇᑭᖅᑐᓂ,
and fully grown all at once. A magic song changed one of them
ᐊᒻᒪ ᖃᑐᕐᓴᑎᐅᓕᖅᓱᑎᓄᑦ. ᑕᒃᑯᐊ ᓱᓕᓕᖅᕿᓐᓄᒃᓄᓐᓄᑦ ᓱᓕᓕᓚᓕᐅᖅᓱᒪᓕᕆᓕᒫᑦ, ᐊᒻᒪ
into a woman, and they had children. These were our earliest forefathers,
ᑕᐃᒃᑯᓇᓐᓂᒃᑕ ᑕᒪᐃᑕ ᓄᓇᐃᑦ ᐃᓐᓄᒃᓱᒪᓕᐅᑦ.
and from them all the lands were peopled.

Tuglik speaking to Rasmussen in 1920s

ᐃᓅᓕᐅᖅᑎᓇᓐᓇᒃ ᐃᓕᓴᒃᑯᓱᐅᑦ ᐅᖃᖅᓱᒪᓕᓕᐅᖅᓴᖅ ᑲᒪᑦᑎᐊᖅᑯᐅᓕᓐᓄᑦ ᓄᓇᒥᑦ,
Before I was born our culture said look after the land, don't pollute it,
ᓱᑭᖅᑎᑦᑕᐃᓕᓐᓄᔪᑦ, ᐅᓴᕆᔨᒍᐱᑦ ᐅᒪᓕᑦ, ᐊᒻᒪ ᐱᓕᓐᓇᓪᓕᐊᕿᐃᑦ ᑕᒪᐃᓐᓇᒃ ᓱᓇᑐᐃᓇᓪᓕᖅᒃ
respect the animals, and you will get all the things you need. Right now it is polluted.
ᐱᖃᓇᐊᖅᑲᑕᓐᓇᒃ. ᒪᓐᓇᓕ ᓱᑭᖅᓱᒪᓕᓴᖅᓴᖅ. ᐃᓅᓕᐅᖅᑎᓇᓐᓇᒪ, ᐃᓄᐃᑦ ᖃᑭᐃᓕᓴᕐᓐᓂᑎᑐᑦ
Before I was born, people did not leave barrels and stuff on the land.
ᖃᒡᑕᐅᐅᖅᓯᓇᒃ ᐊᒻᒪ ᓱᓇᑐᐃᓐᓇᓪᓕᐊᓇᒃ ᓄᓇᒧᑦ. ᑕᐃᒪᐃᓕᓱᒪᓕᐅᖅᓴᖅ ᐃᓕᖅᓴᒪᓱᒪᓕᐅᑦ ᑲᓇᐅᑎᓱᒪᓕᐅᑦ
This is what our culture told us before the Christians came.
ᑎᑭᕆᓕᐅᖅᑎᓇᓐᓂᑦ. ᑕᒪᓐᓇ ᐃᓱᒪᒋᓐᓇᖃᒡᑕᓕᐊᖅᑕᕆᔪ.
This will always be in the back of my mind.

Bernie Putulik in Chesterfield Inlet, October 2006

ᐅᐸᐱᑭᐸᓐᓇᒃ ᐃᐅᓕᓴᓂᐅᒃ ᐊᒻᒪ ᐃᓕᖅᓴᒪᓱᓐᓂᐅᒃ.
I believe in the bible and in my culture.

Bernie Putulik in Chesterfield Inlet, October 2006

When I first met Simionie he told me a story about a set of events his grandmother warned him of before she died just over a decade ago:

> My grandson, I am going to tell you something that you should remember all the time. When animals come from the tree-line, going north, when this happens you have to leave it in your heart and in your mind.

She told him that when these signs appear then he should know "that Christ is coming soon because the world is changing". Her elder words deeply moved him, as Simionie explained they had a spiritual power that came from a daily Christian practice. While other participants also related Biblical passages for understanding climate change, Louie told an IQ-based story that came to him from his grandfather who was born in the mid 1800s. He said that the "weather is going to be changed, its going to change a lot in the future coming", to which Louie added that he didn't "know what year it was going to change, but they knew it was going to happen". What made these IQ-Christian forecasts so relevant to the participants was their relation to current ecological observations that document animals arriving from the south. Andre told the group about his first encounter in over 50 years of hunting with a grizzly bear, while others spoke of newly arriving insects and birds. Such observations support scientific models and field research which suggests that warming temperatures are allowing the boreal forest and its inhabitants to migrate northward.[1] The ACIA projects that southern species will "shift their ranges northward, in some cases by as much as 1000 kilometers", resulting in displacements of some Arctic species, as has "already begun among some bird, fish, and butterfly species".[2] This migration is interconnected to northern ecologies that are increasingly risky due to unstable sea ice, "unusual weather patterns", changing vegetation and shifting

animals which are no longer found "in traditional hunting areas".[3] The ACIA states that the north's "landscapes, seascapes, and icescapes are becoming unfamiliar, making people feel like strangers in their own land".[4] For the Chesterfield Inlet participants, the experience of these changes resonated with stories from both IQ and Christian traditions to manifest a syncretic interpretation of the climatic hierarchy's changes as apocalyptic. This intertwining pattern was succinctly defined by Bernie when he said "I believe in the bible and in my culture". This story clarifies an IQ-Christian view on the West's climatic uncertainty by engaging dialogues that historically contextualize this apocalyptic disruption in the Chesterfield Inlet and Inuit experience of colonial and pre-colonial cultural and ecological changes.

A syncretism of Native and Christian views on apocalypse is not uncommon. Prior to Christian contact, Kidwell, Noley and Tinker explain that many Native American cultures had two general co-existing stories of apocalypse.[5] One is of a moral cosmos that responds to human actions, most often on a local scale. The other speaks of natural cycles of "destruction and renewal" that mirror, on a larger scale, "the cycles of the seasons with its endless circle of degeneration, death, and rebirth".[6] With the Christian missions these understandings "would be inevitably and forever changed" by a view of global apocalypse within a Western culture.[7] The Chesterfield Inlet participants, for example, drew inspiration from the story of Noah and the prophecies in *Revelations*, and Elizabeth Tautu specifically told me to look at Chapter 24 of the *Gospel Acccording to Matthew* "to understand what is happening with climate change". In this passage Jesus' disciples ask him to explain what he meant when he said all the stones of the temple will be overturned. He responds:

> You are going to hear the noise of battles close by and the news of battles far away; but do not be troubled. Such things must happen, but they do not mean that the end has come. There will be famines and earthquakes everywhere. All these things are like the first pains of childbirth… Such will be the spread of evil that many people's love will

> grow cold. But whoever holds out to the end will be saved. And this Good News about the Kingdom will be preached through all the world for a witness to all mankind; and then the end will come.[8]

These Biblical stories came together with a diversity of ecological and cultural signs observed by the Chesterfield Inlet participants. Garbage left on the land, unpredictable weather, strange animal movements, "big smokes" coming out of pipes in the south that make animals sick and plane pollution "coming from Europe to Canada", all of these were described to me as climatic signs of apocalypse. The words heard in Chesterfield Inlet suggested that IQ and Christianity offer some Inuit a cosmologically blended way of interpreting the West's climatic uncertainty. To understand the colonial evolution of this perspective requires first engaging climatic thinking on pre-Western patterns of intercultural contact that is central to Inuit cultural understandings of today's climatic apocalypse.

Earthly Pillars Collapse

In the opening decades of the twentieth century, the *Fifth Thule Expedition* journeyed the Canadian Arctic to places such as Chesterfield Inlet in search of Inuit understandings of the world. During one of these meetings, a man by the name of Naalungiaq told Rasmussen the following story of Inuit cosmological origins:

> In the very first times there was no light on earth. Everything was in darkness, the lands could not be seen, the animals could not be seen. And still, both people and animals lived on the earth, but there was no difference between them… A person could become an animal, and an animal could become a human being… That is the way they lived on earth in the very earliest times, times that no one can understand now.[9]

Contrasting this earliest time that is dark to IQ is a different Western scientific vision of the Arctic's original human inhabitants. When the Arctic was first inhabited by people between 15-25,000 years ago, it was the last mainland frontier of human colonization.[10] The first

arrivals used "ingenious cultural adaptations, including the ability to control fire, construct shelter, make tailored clothing, and develop appropriate technologies" to exploit Arctic resources in a way that "could cope with the rigours of high latitude environments".[11] This northern place is described as the temporary home for all Native American groups that migrated southward from Siberia via the Bering Strait ice bridge.[12] The latest arrival was the Thule culture which is said to have landed in Alaska from Siberia at around 1000 C.E., and from there dispersed across the Dorset Palaeo-Eskimo coasts of Canada's Eastern Arctic and Greenland.[13] A few centuries after this intercultural contact, archaeological evidence of the Dorset fades into a darkness that seems to inspire another Inuit story related to Rasmussen by Tuglik:

> There was once a world before this, and in it lived people who were not of our tribe. But the pillars of the earth collapsed, and all was destroyed. And the world was emptiness. Then two men grew from a hummock of earth. They were born and fully grown all at once. A magic song changed one of them into a woman, and they had children. These were our earliest forefathers, and from them all the lands were peopled.[14]

Bringing together Western and IQ-based views of Inuit emergence from a world whose pillars were collapsing allows my climatic thinking to sift for intercultural patterns that influenced the later Chesterfield Inlet adoption of an IQ-Christian view of changes in the climatic hierarchy.

In Robert McGhee's synthesis of anthropological research, a picture of the Dorset's disappearance is just barely reconstructed from limited archaeological evidence, Inuit oral stories and conjecture based upon historical forces commonly related to cultural collapse. Beginning around 1500 B.C.E., the Dorset evolved a cultural way of living in the Arctic from Alaska through to northern Quebec and Greenland during a period of significantly cooler temperatures than that of the past few centuries.[15] Starting around 700 C.E., the Dorset met a climatic challenge in the rising temperatures of the medieval warming. This warming initiated

a series of northern environmental and cultural disruptions that, McGhee explains, "must have brought a baffling mixture of dangers and opportunities".[16] Clarifying the difficulties, he states:

> Over a period of a lifetime, or even over a few years, an area that had rarely known caribou may have become a summer home to tens of thousands of the animals... People living along coasts that had previously been frozen for most of the year may have suddenly found themselves watching parades of walrus, narwhal, and beluga migrating through the open waters of early summer.[17]

On land the warmth resulted in the North American tree-line shifting "north about 60 miles".[18] These new arrivals brought conditions that were unpredictable for a knowledge which was based on cooler tundra ecologies, probably bringing "starvation conditions among small communities, forcing members to move in order to find new sources of food or to seek help from neighbouring bands".[19] These climatic changes also brought the Dorset into new relations with more southerly-based cultures which were following the warmth into this northern land from two different directions. In 982, Erik the Red of the Norse reported finding traces of inhabitation on Greenland that, McGhee proposes, must be the Dorset. Norse chronicles of the eleventh century continue to document meetings along the large island's eastern coast, while the archaeological evidence of "pieces of smelted sheet copper" at Dorset sites suggests to McGhee a fairly "intensive relationship between the two peoples".[20] Unlike the Norse whose movements beyond Greenland was restricted by the temperature necessities of their European agricultural ways, the culture coming towards the Dorset from the Asian continent to the west had no such limitations.

The rising temperature which warmed up the northern waters allowed the bowhead whale population to shift north above the North American mainland. Following these whales from Siberia and Alaska all the way to Greenland over the period of a few centuries was a Thule culture that was evolving a way of life based upon combining iron, which came from

trade networks reaching as far as eastern Asia, with "the development of efficient whaling techniques".[21] Their boats allowed them to travel "several hundred kilometers" in a summer season, and when a whale kill was made the Thule would create a semi-permanent settlement in that region.[22] These communities were "composed of houses built from stone and turf, the roofs raftered with the huge jaw-bones of whales".[23] During the dark winters, the Thule used their whaling technology coupled with dog-drawn sleds to secure resources. Based on this technology that allowed them to travel in large numbers with powerful weapons, McGhee explains that the Thule would have been successful in most encounters with Dorset when violence was required to secure sustenance. This cultural visitation that followed the shifting ecology of a warming climatic hierarchy was not the only blow to the Dorset's existence as a distinct culture. Coming with the Thule from Asia were infectious diseases, like influenza, which resulted "in the same type of 'virgin soil epidemics' that have decimated aboriginal populations over the past few centuries of global travel".[24] Explaining the science, McGhee states "that the extreme vulnerability of aboriginal peoples to disease resides largely in the genetic uniformity of such small, isolated populations; viruses transmute themselves so quickly in adaptation to their hosts that they are much more effective against another person who is genetically similar".[25] Within a few centuries of contact, the Dorset would have been reduced to small pockets due to a combination of starvation and disease. By the second wave of Western European arrivals in the sixteenth century, the distinct 3000 year old Dorset culture seems to have disappeared from the Arctic tundra's archaeological evidence.[26] In the words of Tuglik told to Rasmussen, the "pillars of the earth" had indeed collapsed for the Dorset.

While the Dorset culture collapsed from the gaze of Western research, McGhee argues that remnants of its ways found a place in an evolving northern culture. Inuit stories of "stolen wives and adopted orphans" suggest that "minor elements of Dorset language, culture and view of the world may have been incorporated" through the Thule culture.[27] Both the "domed igloo" and the harpoon technology of Inuit are suspected to have derived from the legacy of

the Dorset as it came together with the Thule.[28] These are significant patterns in the evolution of an IQ that became a distinct tradition as the approaching *Little Ice Age* showed its first signs in the early-fourteenth century, and became a full blown trend by the sixteenth century. In fact, Western research finds this cold trend to coincide with the transformation of the Thule from an economically richer and more uniform culture into a diversity of Inuit groups.[29] As the open water and whaling opportunities receded with a cooling Arctic, McGhee states that the Thule probably had to place "greater reliance on smaller animals - seals, caribou, and fish - than on open-water hunting of large sea mammals", and that through this process they would have become more regionally adapted to a "wider range of habitats".[30] While the Greenland Norse were unsuccessfully trying to adapt agriculture to this cooling,[31] the Thule drew from Dorset cultural knowledge in their transformation into regionally distinct Inuit cultures like the Polar Eskimo of Greenland, Central Inuit of Baffin Island and the Caribou Inuit inland from the Hudson Bay's west coast.[32] In the words of Miller, "Thule culture is the historical factor that explains the biological, linguistic, and cultural similarities of all Eskimo between Bering Strait and Greenland".[33] It seems that this cooling also brought a cosmic collapse of the Thule's pillars, opening the north to peopling by a myriad of evolving Dorset-Thule or Inuit cultures.

Because Native people often take issue with anthropological interpretations which suggest they have come from Asia, as opposed to their vision of originally inhabiting a home land, I asked Jaypeetee his opinion concerning this Western view of Inuit. Drawing upon the current situation of Inuit within Canadian culture as a starting point, he stated that for an alien anthropologist it would appear "that Inuit culture died out in the 1960s (and perhaps it did), but I still consider myself an Inuk".[34] After clarifying that the term Inuk would not have been used by the Dorset or Thule, Jaypeetee wrote that despite the uniqueness of his present self-description "my ancestors say we've been here since the beginning".[35] His point is that archaeological evidence is always incomplete, especially the further back in time one traverses, and that the reality of cultural change in the present and in the past may have more

fluid intercultural connections which deeply interrelates Inuks to the Thule and Dorset cultural inheritance derived from relations with this northern land.

While the Dorset brought to the Inuit a shamanistic religious system and worldview that saw personal spirit helpers as the medium through which humans could control, or at least manipulate, the small-scale events of their environment",[36] the Thule appear to have offered many of the common practices and cosmological beings that transcend Inuit cultural differences across the north. One can imagine a religious syncretism manifesting as the *Little Ice Age* progressed, bringing forth an Inuit shamanism that was, as Tuglik said, "fully grown all at once". The approaching cold would have offered a severe challenge to Thule ways, while the few remaining Dorset may still have had access to cultural knowledge which could prove adaptive on the cold tundra. The shifting of temperature and ecologies beginning in the fourteenth century would facilitate a more meaningful relation between Dorset and Thule, with both religious views coming to inform Inuit shamanism and IQ. Recognizing this reality does not necessitate denying the existence of past and present power dynamics related to population size, political economic organization and technological adaptations, but rather simply suggests a deeper level of syncretism between the Dorset and Thule in the creation of Inuit culture.

Concluding his thoughts on this topic, Jaypeetee stated that an IQ view of this history recognizes that in Inuit creation stories the "sense of time is not a linear process, but is more like a person slowly achieving cognition and memory in a way that things fall into place".[37] This may be a more culturally appropriate way of contextualizing that which can be anthropologically and orally known about a history whose climatic cycles edge out to a deep past where "everything was in darkness". Jaypeetee offered my climatic thinking an Inuit ear for listening to Tuglik's magical song about apocalyptic changes which brought forth an Inuit culture whose ancestors have been in the north since before the *Little Ice Age* and medieval warming. It is this Inuit culture that today comes together with colonial Christianity in the community of Chesterfield Inlet as the Arctic warms.

End of the Little Ice Age

As the *Little Ice Age's* cooling continued Inuit came to meet the same trilogy of forces as those which impacted the Dorset: contact with a culture of superior technological means, disease and an eventual climatic shift. The earliest Western documentation of relations with the people who were becoming Inuit dates back to the thirteenth century. In his history of the intersection between climate cycles and culture, H. H. Lamb explains that the medieval warming provided the Norse with an opportunity to settle Iceland and Greenland starting in the tenth century.[38] As the climate became colder around 1250, the Norse roamed "more widely afield in search of materials and game, including penetration farther north than before to the west of Greenland, reaching Baffin Bay" where they contacted southward moving Thule.[39] By the mid-1300s the Catholic Church sent to western Greenland an official named Ivar Bárdarson with a group of Norse "to drive away the hostile" people who were rumored to be attacking the settler's farms.[40] Upon his arrival there was only a ghost town, and Bárdarson assumed that those who would become Inuit were to blame, though "modern archaeological excavations reveal a settlement that was dying on its feet from the cold".[41] Concerned about the well-being of these settlers "situated at the ends of the Earth in Greenland" who had been without a priest for eighty years, Pope Alexander VI wrote in 1492 that "shipping to that country is very infrequent because of the extensive freezing of the waters - no ship having put in to shore, it is believed, for eighty years".[42] This was merely the first climate-mediated contact between Inuit, who were moving south to diversify subsistence, and a Christian Europe that would attempt to expand agricultural adaptations to the north.

The next fifteenth century Western meeting between Labrador Inuit and both Norman and Basque whalers occurred "before the time of Jacques Cartier".[43] The European whalers were introduced to Inuit whaling technology that came through the Thule whaling culture and Dorset harpoon development, and extended this northern tradition by adapting it to their own

"distinctive whaling technology".[44] Not long after these Labrador relations, the different Inuit groups of the eastern Arctic began coming into contact with British and French explorers searching for a Northwest Passage to trade with Asia and the South Pacific.[45] Explorers continued to be a sporadic presence for centuries, with it not being until the nineteenth century that British explorers would pass down to the present stories about the adaptive superiority of IQ for traversing the cold Arctic tundra and marine ice.[46] Clothing, tools, survival techniques and Inuit guides who, as "perceptive readers of snow and ice conditions, weather patterns, and the behaviour of animals", were indispensable for the foreign explorers.[47] Arriving in the early nineteenth century were Scottish and American whalers hunting for the oil of whales that was "a popular source of energy" before other "petroleum products began to supplant it in the North American market from the middle of the nineteenth century onward".[48] The nature of whaling meant that these Western Euro-Americans had longer lasting contacts with Inuit that were of greater impact. The whalers were the first to trade guns "and other accouterments of the industrial age" to Inuit for their IQ-based services.[49] Meanwhile, the second half of the nineteenth century saw the value of whale oil to industrialization become less important in the West as more abundant and profitable fossil fuels became the focus of interest. At the same time as this decline in northern whaling, the Inuit also began to experience the industrial warming trend that began at around 1860 in the Arctic.[50] The *Little Ice Age's* end was mitigated by a dynamic energy which made northern whaling obsolete and marked the onset of the West's climatic uncertainty: fossil fuels.

The dawning of industrial warming inaugurated a new set of Inuit-Western relations that would be of increasing intensity as they progressed from the late-nineteenth into the twentieth century. On June 23, 1870 the British Parliament passed the *Rupert's Land Act* to give the Canadian government jurisdiction over all the land from which rivers flowed into the Hudson Bay. This large area included parts of western Quebec, much of northwestern Ontario, the Plains provinces and the area today known as Nunavut. By the end of the century, Canadian

officials were trickling into the area to stay on Inuit land, unlike the earlier whalers who "always returned with their catch to the ports from whence they came".[51] These more sustained relations of close proximity brought Western diseases for which the biology of small Inuit communities, as with the Dorset before, was unprepared, resulting in an approximate one-third loss of the population.[52] All these interacting changes coincided with an increase of contacts with Canadian government officials, traders and Christian missionaries. It is the latter group that is of primary importance for contemplating an evolving IQ-Christianity as part of the Inuit's evolving syncretic northern tradition.

Prior to the Christian missionaries, some Inuit had already attended Christian services on whaler boats.[53] With the beginning of the twentieth century, a more sustained missionary influence would be "dedicated to changing the beliefs, and therefore many of the customs of all the Athabaskan and Inuit".[54] Moravians, Anglicans and Catholics not only tried to convert the Inuit, but competed with each other for their souls.[55] Each denomination had a different interpretation of the Christian mission, and thus there were variations on the extent to which Inuit religious practices and beliefs could be maintained. While the Inuit of Labrador confronted Moravian missionaries who were "strictly intolerant of any forms of religious syncretism",[56] Catholic missionaries often took a more lenient approach which allowed similar beliefs to mitigate pagan conversions. Despite their differences, all these faiths held in common a practice of placing Inuit culture and IQ in a secondary position to Christian views.

In 1912 the Oblate Catholics set up their mission in Chesterfield Inlet for the Caribou Inuit of the Keewatin region west of Hudson Bay. They were followed by the 1931 arrival of four Catholic Sisters of the Grey Nuns from Nicolet, Quebec who came to serve "the poor, the sick, and the abandoned".[57] This mission tried to keep the converted on the true Christian track by controlling "moral attitudes and conduct through encouragement, private and public exhortation, or through benign or less mild reprimands".[58] Offering insight into this process are the words of the elder Simon Tookoome:

> One thing was made very clear by the missionaries and other followers, when they began arriving in our land: "People have souls", they said, "but animals are just there to be killed. They have no soul, as they are just food".[59]

While "such control, and in particular reprimand, was not always appreciated by the Inuit",[60] the missions were generally successful in converting a significant proportion of the population. Sister Pauline Fitts of the Grey Sisters wrote that the conversions "are very numerous" and "it is a consoling reward to hear [Inuit] chant the parts of the Mass by memory, or break into a glad "Magnificat!" in Latin as an act of welcome or of thanksgiving".[61] Contemplating the Grey Nun's mission, "His Holiness, Pope Pius XI" called it "the most beautiful, the most difficult, the most meritorious" in the world. "If We could see only one mission," the Holy Father declared, "that is the one We would want to see".[62] So successful was the Chesterfield Inlet mission that the year of the Grey Nun's arrival in 1931 also saw the birth of a young girl by the name of Poovlaleraq who would become the first Inuit "nun in the world".[63] Through her Chesterfield Inlet embodiment of an Inuit relation with Catholicism, Poovlaleraq offers significant guidance to an IQ-Christian view of the West's climatic uncertainty.

The first point of interest is the coincidence between Poovlaleraq being a daughter of sorcerer Joseph Okatsiak, and the extensive research which indicates that many different Native people, including Inuit, viewed Christian missionaries as sorcerers or shamans.[64] Based on his research with the Tununermiut Inuit of northern Baffin Island, John Matthiason explains that the devotion traditionally given to the shamanistic religion was quickly converted to Christianity because "the missionaries, whether they were aware of it or not, were seen as powerful shamans who had personal relationships with the most powerful spirit helper of them all - Jesus Christ".[65] As was common in the Christian conversion of pagan Europe and many Native American peoples, to be discussed in more detail in the third act, the Tununermiut "continued to practice both shamanism and animism", even though they became "devout Christians".[66] Considering the difficulties of conversion that still existed in 1956, a

Father from Pelly Bay wrote that for Inuit "the priest occupies the eminent place formerly held by the sorcerer", adding that as with the priest these sorcerers provide "a similar link between the spirits on one side and the Eskimos on the other".[67] These historical observations suggest that Poovlaleraq may have seen herself following in the footsteps of her father by becoming a Sister who had access to the West's powerful God.

On February 15, 1951, at the age of twenty, Poovlaleraq committed to a "profession in the Institute of the Grey Nuns of Montreal at Chesterfield Inlet", becoming known through her baptized name as Sister Pélagie.[68] In July of that same year, she wrote a letter to Father Thibert concerning an already observed problem with the Christian conversions:

> Although they are baptized, many Eskimos do not understand their religion very well as yet. They are those I must aid through my prayers and works, and especially the children, so they may understand what is good for them, follow the commandments and, in brief, lead a devout Christian life. Our Divine Saviour has inspired me to direct and guide them on the right path.[69]

Sister Pélagie's desire to guide Chesterfield Inlet into Catholicism coincided with a Canadian post-WWII political desire to complete the conversion of Inuit. Before considering the progression of these colonial changes, it is helpful to first reach into the historical beginnings of the Grey Nuns. Such climatic thinking will clarify the Christian view which came into contact with the Inuit of Chesterfield Inlet, Sister Pélagie and IQ.

Les Soeurs Grises

When the widowed Marguerite d'Youville was appointed "the directress of the General Hospital of Montreal" in 1753 by the French King Louis XV, she was also named Mother of the first Canadian Order of Sisters.[70] The Grey Nuns were "a new institute of the Sisters of Charity", an order that was created in France in 1633 to help the ill and poor in the spirit of the Jesuit mission to Canada which applied ascetic practice in the service of

manifesting God in the world.[71] Following the seventeenth century Jesuit mission which converted Huron, Algonquin and Iroquois, the Grey Nuns would extend this missionary activity into Métis, Athapaskan and Inuit lands. The founder of this French Catholic journey into colonial Canada was born October 15, 1701 in the town of Varennes, Quebec on the south side of the St. Lawrence River, just twenty miles from the town of Ville-Marie – what is today Montreal.[72] Given the name Marie-Marguerite Lajemmerais, it would not be until after a marriage, five children and widowhood that she would step firmly into a religious calling which led to the creation of the Grey Sisters.

Throughout the time of Marie-Marguerite' marriage, her husband, Francois d'Youville, served the private fur-trading interests of Governor General de Vaudreuil by illegally selling alcohol to Native groups to acquire cheap prices on furs. In July 1723 a delegation of Nipissing read the following declaration of complaint to the Governor General in Montreal:

> O Father, we come to tell you that we cannot pray to God because Youville... gets us drunk every day, and makes us drink up the value of all our furs, so that we are miserable and naked, without even shirts or clothes of any kind to cover us, or firearms to hunt with. Every morning he comes into our cabins with wine and brandy... and he always gets us drunk to the full value of the pelts, so that the good missionary, who makes us pray to God, always finding us thus senseless, told us that he would not teach us any more.[73]

It was not until after her marriage to Francois that Marie-Marguerite became aware of her husband's activities. Eight years of adultery-filled marriage would pass before he died of an acute lung inflammation, thus releasing her to another passion. While this death offered respite from an unhappy union, Fitts explains that Marguerite "did not look upon the death of her husband as a release from suffering and shame".[74] His 1730 death led Marie-Marguerite to follow her conscience into a religious calling dedicated to helping the poor.

This religious vocation arose in a seventeenth century French colony that was characterized by "the adventurous life of the colonists" and Iroquois wars which proliferated isolated "orphans, widows and old people".[75] The impacts of these calamities guided Marie-Marguerite and three other women to use her house in the center of Montreal's colonial bustle as a refuge for the suffering poor and transient Native people. Not long into this vocation false rumors began to spread that the widow and her companions were continuing Francois' trade of selling liquor to the Natives and becoming intoxicated themselves, earning them the name *les Soeurs Grises*, which means "The Tipsy Nuns".[76] Though this new vocation was haunted by a husband who brought the taunt *les Soeurs Grises*, years of dedicated service allowed this name that "sprung from malice and mockery" to grow with "respect and affection" in Montreal.[77] With her appointment as directress of the General Hospital and the institution of the Order, she decided to symbolize the title *les Soeurs Grises* in their symbolic habit. Since "grise" also means grey in French, Mother d'Youville chose this color for their outfit so as to symbolize the Order's early struggles, as well as define the practical nature of their work.[78] While the dress was in the practical Norman camlet style, the headdress consisted of a "tight band of white muslim, close to the face, over which hung loosely a strip of black gauze, in the style of a widow's cap".[79] This habit became a reminder for Grey Nuns "of humiliations assumed", all of which began with the foundress' own marriage.[80]

As the Order's leader, Mother d'Youville guided the Sisters through teachings of devotion to the Sacred Heart of Jesus and Immaculate Heart of Mary, the guardian angels, "complete dedication to the poor", the value of poverty "and the freedom of obedience" to divine will.[81] Her way of living reinforced these teachings, as she "practiced mortification relentlessly as the breeding ground of religious virtues, especially the spirit of... a chosen poverty, a poverty of spirit" where everything is owned in common so that a "heart freed from every bond can more easily turn to God".[82] This religious poverty also resonated with changing social realities. During the war with the English that ended with the 1763 *Treaty of*

Paris and British control of the colony, there was a reduction of provisions available at the hospital. Mother d'Youville's response was to reduce the already meager daily food of the Sisters "so that the poor and sick could have the bread that remained".[83] This example displays the way in which the Order saw themselves as practicing a religious poverty that interacted with the realities of those in need. With the fall of the French colony and the loss of financial support from France's Crown, Mother d'Youville's way of spiritual poverty led her to open a seigniory towards the end of her life in Châteauguay to support the Order's work. Just west of Montreal, this seigniory was "bordered on the north by the St. Lawrence River… and on the east by" the Mohawks of Kahnawáwa:ke.[84] To become self-sufficient, land and a mill was rented to tenant farmers. With her Order thus established, Mother d'Youville died on December 23, 1771. Her final words became the Order's maxim: "My dear Sisters, be constantly faithful to the duties of the state that you have embraced. Walk always in the path of regularity, obedience, and mortification. But above all, let the most perfect union reign among you".[85]

The Grey Nuns' missionary activities outside the area of Lower Canada or Quebec would not begin until seven decades after Mother d'Youville's death. On September 13, 1843 the Bishop from the Red River Settlement in present-day Manitoba appealed to the Sisters for help with the Native and Métis groups in the western colony.[86] Of the many volunteers four Sisters were chosen, the same number that began this Order's work in Mother d'Youville's home and which would later travel to Chesterfield Inlet. The 35 year old Sister Marie-Louise Valade was chosen to lead this new mission. Departing on April 24, 1844, the four Sisters journeyed over 1400 miles in 59 days on the canoe trails of the *coureur de bois*.[87] Following La Vérendrye's fur trading route, an explorer who is coincidentally Mother d'Youville's uncle, the voyageurs carried the Sisters across the "Ottawa (Outouais) River, Mattawa River, Vase River, Lake Nipissing, French River, Lake Huron, St. Mary's River, Lake Superior, Kaministiquia River, Rainy Lake, Rainy River, Lake of the Woods, Winnipeg River, Lake

Winnipeg, and Red River".[88] Between the La Chine, near Montreal, and the Red River there were seventy-two portages that tested the religious poverty of these Sisters. One wrote:

> We nearly always had bad weather. We have hardly slept since we left. Serpents and snakes camp with us. The portages are long and tiring. We have to climb steep slopes, make our way through bushes, walk through ravines and dead trees. We cannot go back.[89]

Another Sister broke her foot on the way, an impediment that resulted in the voyageurs threatening to leave her behind since she "had to be carried the remainder of the way".[90] The fever and chills that followed led the other Sisters to wonder "if her grave would not be marked by a cross on a lonely shore", like those that marked the many shoreline graves of earlier *coureur de bois*.[91] On June 21, 1844 they arrived in Red River, and in that same year Mother Valade founded the St. Boniface Convent.[92]

During Mother Valade's final visit to Montreal in 1858, just three years before her death, she escorted three boys including a fourteen year old Louis Riel to colleges in Quebec.[93] While Louis became the infamous Métis political leader, his sister Sara Riel joined the Grey Nuns and became one of a "host of missionaries... to spread civilization to Isle-a-la-Crosse, and then to the Inuit country, the most remote territories of the Arctic Circle".[94] Just as hardships in eighteenth century Montreal informed the religious poverty of Mother d'Youville's *Soeurs Grises*, these difficult missions into the wilderness also became a discipline in Christian poverty. Writing about the Grey Nuns of Nicolet who went north to Chesterfield Inlet in the 1930s, Sister Fitts states they "enjoy God's benediction in proportion to the immense hardships and privations of their daily lives", for they have endured "long months of darkness, bitter cold, almost complete isolation, the special self-annihilation of conformity to Eskimo ways".[95] In this spiritual poverty the Sisters found a great Inuit ingenuity for making use of all that is available in a northern wilderness, a trait that resonated with Mother d'Youville's "supernatural spirit of poverty" that "knew how to make good use of everything".[96] Despite

this ascetic resonance between Inuit and the Grey Nuns, there was also much that differed between the practices of these two cultures. This difference is highlighted by Poovlaleraq's reflection on her life as a Grey Nun:

> They have rules to follow, rules that are really hard, and Inuit don't have that kind of rules. We had to carry sharp objects that hurt the body, especially around the arms and the neck. I don't know how many nuns died trying to beat temptation.[97]

The difficult Christian poverty that the Sisters employed to beat temptation in the midst of a fallen wilderness so as to bring about union with the divine will was foreign to Poovlaleraq's shamanic heritage. Her difficult intercultural experience symbolically guides my climatic thinking into this period when the Inuit of Chesterfield Inlet experienced violent colonial pressures to be transformed into what Rogers defined in the introduction as the "newly stupid". As will be seen, this experience is central to the IQ-Christian view of the West's climatic uncertainty that presented itself in the Chesterfield Inlet dialogues.

A Changing Colonial Climate

In his documentary about the colonial impacts on the Inuit of Keewatin, Martin Kreelak describes how in the 1950s his family and many other Inuit were forced by the Canadian government to relocate from their camps to settlements such as Chesterfield Inlet, Rankin Inlet and Baker Lake.[98] Andre also recalled being raised by his grandparents on the land, and that "he never saw a wooden building until 1950 when we moved to the community". Inuit were forced to live in these cramped villages, and Kreelak explains that "to make it you had to join the white people's world". Talking about this experience from within today's *Arctic Christian Fellowship Church* in Chesterfield Inlet, Kreelak begins by clarifying that in "this church of the lord there is room for both Inuit beliefs and the Bible".[99] This church's syncretic freedom reminds him of a time when things were not this way, when his generation went to Chesterfield Inlet's residential school and were told "by old-fashioned

missionaries" that there was "no room for Inuit traditions".[100] These schools squeezed the Inuit out of the children by, in his experience, giving them no access to Inuktitut and relatives who could teach them about their country and traditions. There were also incidences of sexual abuse in the school which eventually resulted in the laying of charges and a public apology by the local Catholic Bishop.[101] Though there has been no charges of abuse laid at the feet of the Grey Nuns, it is still the case that their mission to provide "refuge for the poor, the sick, and the abandoned" participated in colonial missionary activities that deeply hurt many of the Inuit they came to help.

After being a Grey Nun for twenty years Poovlaleraq left the Order. When Kreelak asked her about this tough time for Inuit children in relation to her reason for leaving, she said that "It is not going to help anybody [going over those things] that led me to resign from being a Grey Nun. It will only help myself, that's my thoughts".[102] While Kreelak respects her reasons for keeping these secrets, he suspects that the residential school was central to why she left. Due to the devastating long-term impacts of residential schools and other Canadian missions on Native peoples, the federal government ordered a *Royal Commission on Aboriginal Peoples* (RCAP) which was released in 1996. Resonating with the remembrances of Kreelak, the report states that the "premise of resocialization" was to "kill the Indian in the child" by "severing the artery of culture that ran between generations".[103] Through the institutionalized separation of child "from parents and community", the younger generations would find themselves isolated in a world that was "hostile to identity, traditional belief and language".[104] Residential schools utilized punishment, food deprivation, head shaving and public beatings to institute this re-socialization. One Inuit related the experience of having "a heavy, stinging paste rubbed on my face, which they did to stop us from expressing our Eskimo custom of raising our eyebrows for 'yes' and wrinkling our noses for 'no'".[105] While the report clarified that "there were caring and conscientious staff", the isolation of these schools from both Native and non-Native communities interacted with the power differentials

to make them "the opportunistic sites of abuse". The RCAP concludes that the reluctance of the government "to challenge the churches and to insist upon the proper treatment of the children" coupled "with the churches' persistent carelessness in the face of neglect and abuse by their members" were the "central elements in the pattern of mishandling abuse". The realities of this mission led Poovlaleraq to leave the Grey Sisters and resulted in younger Inuit experiencing "more stress-related problems such as homicide, suicide, family violence, child abuse, drinking and other forms of drug-taking behavior, including inhalant abuse".[106] This type of cultural stress is, according to Denov and Campbell, "apparent in societies that have undergone massive, imposed, or uncontrollable change", such as "loss of land, loss of control over living conditions, and restricted economic opportunity".[107] The RCAP adds that these youth not only become disconnected from their cultural heritage, but become "stranded between cultures, deviants from the norms of both".[108] For the Inuit, the result has been a suicide rate that is "3.9 times the national average",[109] high levels of alcohol and drug abuse, family violence and a large generational gap in cultural knowledge.[110] Instead of affirming a relation that had syncretic potential, the West's religious and political economic institutions undermined Inuit culture and IQ.

These colonial impacts that come from the impetus to quickly transform Natives into something civilized drew me back to the two years I spent in the Innu community of Davis Inlet on Labrador's northeastern coast during the late 1990s. Since these experiences inform my climatic thinking of these colonial changes on Inuit, a short detour will provide insight into the influences that inform my approach of these IQ dialogues. Davis Inlet or *Utshimassit*, "the place of the boss", came into Canada's national consciousness, and my own awareness, in January 1993 after six children "barricaded themselves in an unheated shack in temperatures of minus forty degrees and attempted to kill themselves by sniffing gasoline".[111] The research of Denov and Campbell on Davis Inlet concludes that social issues like gas sniffing are intimately interlinked to a cultural experience of forced displacement related to the Churchill

Falls energy project and an education that encourages children to abandon their language and culture.[112] As a social worker in this community, my task was to mediate these social ramifications of colonial relations. During my time there, I lived in and took care of the Oblate Roman Catholic mission house and church for the vacant priest. My personal connection with this missionary history runs even deeper, as Mother Valade's westward journey recalls memories of summer weekends spent at a Catholic convent cared for by my grandfather Valade, visits with his sister who I only knew as Sister Valade of the Order of St. Joseph, occasional family trips to Châteauguay and the ever-present symbols of Jesus' Sacred Heart and the Mother Mary's Immaculate Heart in their house. My choice to do social work in a northern Native community mired in youth gas sniffing was following an ancestral French pattern that both mitigated and attempted to heal civilizing missions.

The difficult problem of gas sniffing I encountered is a youthful response to cultural loss, and it is by no means unique to Innu. A 1975 study of Cree and Inuit youth from northern Quebec found that 62 percent "had sniffed gasoline at least once in the last six months".[113] More recent surveys of Native communities in Canada, the United States and Australia have found that "50-60% of children surveyed had sniffed petrol at some time and 11-50% were acute or current petrol sniffers".[114] This response to cultural stress first became prevalent in Native communities in the 1960s, with it being the drug of choice because the isolation of northern communities makes drugs common in urban centers difficult to access.[115] When this situation is coupled with the finding that gas sniffing rates tend to rise during "periods of increased conflict or disruptions",[116] then it becomes understandable why gas sniffing is prevalent in Native communities. The inhalation of the gas provides youth with "access to a 'different world'" than that of colonial social violence.[117] As the chemicals depress the central nervous system, the individual experiences "feelings of greatly increased power and aggressiveness", as well as "inebriation, dizziness, floating sensations, exhilaration, and intense feelings of well-being".[118] In the short term, these youth act out against the power

structures, and thus "interact heavily with the juvenile justice system".[119] Over the long term, sniffing "causes cognitive deficits that include apathy, poor concentration, memory loss, visual spatial dysfunction and decreased speed of processing complex linguistic material".[120] The feeling of "isolation and indifference towards oneself and others"[121] lead some Australian aborigines to describe gas sniffers as those who "cannot hear" because they have become people who are "without comprehension" and are "unable to worry or be concerned about their actions".[122]

Describing this symptom of colonial disruption as creating people "without ears" is apt in the context of the West's institutionalized generational gap in Inuit culture. Decades of being separated from family, elders and the land by residential schools together with calls for development has left many Inuit disconnected from an IQ that would allow them to hear the land, animals, climate and ancestral stories that interconnect them to the Thule, Dorset and the beginning of Arctic time. While gas sniffing is an extreme response, its quick transformation of people resonates with the purpose of Western Christian and political economic missions that became increasingly prevalent at the end of the *Little Ice Age*. As John Livingston explains in his analysis of oil development in the Arctic, the historical progression from religious to political and into market economic missions hides their most essential common belief: a wasteland theology that views the Arctic "as a land which has not as yet been enhanced by the hand of God through the tools of man, and brought into fruitful domestic production".[123] Since the land was "not contributing its fair share to industrial human progress", Livingston finds that both a religious and developmental conversion of the people was required.[124] The wilderness of the Arctic tundra had to be civilized, progressed and sustainably developed by a Western culture that is "without ears" for listening to an IQ that can adapt to the land. Thus, a Western culture that was bioregionally stupid to the Arctic newly initiated the Inuit into this tradition. As Inuit endured these successive colonial conversions, the West has also emitted copious amounts of CO_2 from the combustion of fossil fuels which

replaced whale oil, and which was also the choice drug of Native youth in the north. The civilizing missions to develop the world throughout the twentieth century was largely fuelled by this energy which in the Arctic has manifested a warming not seen since the arrival of the Thule. Melting ice north of the continent is expected to open a North-West Passage that was the dream that brought Western explorers to this land after the Norse. While Western political economic discourse on this passage's melting is largely concerned with issues of national sovereignty and the economic benefits of this trading route, for Inuit and scientists it is one sign amongst a broader pattern of warming changes that bring flora and fauna to the north as ecologies of ice, frozen tundra and snow melt into the past. These icy changes signify one ecological way in which the West's climatic uncertainty furthers this colonial transformation of Inuit into the newly stupid.

Arctic ice in 2000 occupied "approximately 2,100,000 km^2 of the world's ice-covered area, which represents about 14% of the global total".[125] Most of the north's glacial ice is found in a Greenland Ice Sheet that measures 1.7 million km^2, only second to "the 13 million km^2 area of the Antarctic Ice Sheet", as well as other regions of "small glaciers and ice caps in the Canadian Arctic islands".[126] Baffin Island's ice caps that formed during the *Little Ice Age* are now "rapidly melting, and many are likely to disappear in the next few decades".[127] The ACIA reports that while "the annual average sea-ice extent has decreased by about 8 percent, or nearly one million square kilometers" over the past three decades, this "melting trend is accelerating" as seen in summer sea-ice which has declined by 15 to 20 percent.[128] On a global scale, the meltwater of northern ice will continue to contribute to a sea level rise, perhaps even impacting the Atlantic Ocean's circulation and the warmth it brings to Western Europe.[129] The loss of ice and snow will also reduce the amount of sunlight being reflected away from the Earth while increasing the melting of permafrost, thus creating feedbacks that could increase the warmth related to the West's gas addiction. These decreasing levels of ice and snow come together with the colonial legacy to deeply impact an IQ that has evolved over the Thule-

Dorset centuries of the *Little Ice Age*. This ancestrally deep IQ that has been battered by Western missions struggled in Chesterfield Inlet to describe to me these stupefying changes through an IQ-Christian vision of apocalypse.

Warming Northern Apocalypse

Over the latter part of the twentieth century Inuit have taken back increasing political economic and religious control. Kreelak views Chesterfield Inlet's *Arctic Christian Fellowship Church* as part of this cultural healing process that gives space for Inuit to attune their hearing once again. What is interesting in both Kreelak's story and the voices of Chesterfield Inlet is the way in which this hearing opens out to IQ and Western understandings. The workshop participants saw the value in IQ's ecological knowledge, adaptive practices and stories, but also wanted to engage scientific knowledge and Christian stories as means to understand these changes that became observable in the 1980s and 1990s. The IQ-Christian syncretism, in a context of Arctic warming, intimates the intercultural patterns of earlier climatic changes which led to the emergence of diverse regional Inuit cultures out of Dorset-Thule interactions, while also offering an alternative cultural response to that colonial legacy which is interconnected to the West's climatic uncertainty.

Thinking about the speed at which Christianity took hold in Inuit culture, Jaypeetee found its conception of a soul constantly struggling "for survival in a harsh, unforgiving environment" offered a heavenly promise for Inuit that could be easily accessed "through the simple act of baptism and acknowledgement of Christ as the rightful savior".[130] The Christian view of the world as a wasteland has for some Inuit come together with the harsh realities of living in the north's climatic environment. Christians holding this worldview have historically converted souls by marginalizing IQ, and this approach has had some success amongst Inuit who, Jaypeetee stated, "would rather see Inuktitut and IQ die, and do actively pursue that end".[131] Contrasting this conversion of some fundamentalist Inuit souls to the Western mission

are the complaints of early missionaries about the continuation of animistic beliefs among converts, and Kreelak's description of the *Arctic Christian Fellowship Church* as a blending of Christianity and IQ.[132] Living in a northern environment that climatically changes seems to have made intercultural adaptations a practical necessity. For the Chesterfield Inlet participants, there is something practical in blending IQ oral stories with Biblical passages in relation to the north's climatic changes.

After stating "I don't think the Arctic contributes to the climate changes", Andre clarified what he saw as his limits in interpreting the source of these changes: "I am not an expert, I really don't know, I am only a poor fisherman, I am only a poor hunter, but even bags and oil containers, are thrown away everywhere" on the land. Offering a similar IQ view, Bernie stated:

> Before I was born our culture said look after the land, don't pollute it, respect the animals, and you will get all the things you need. Our culture said not to leave the garbage on the land as you will pollute it for the future, and as of right now it is polluted. Everywhere we go hunting, people leave their stuff. But before I was born, people did not leave barrels and stuff on the land. This is what our culture told us before the Christians came. This will always be in the back of my mind.

While Christianity's original sin doctrine essentially results in the separation of divinity from humanity and nature, except as a sign of God's distant disapproval, these words reflected a traditional Native conception of sin as disorders, illnesses or famines which are nature's animation of the divine's moral response to human indiscretions.[133] Sin in many Native traditions is commonly viewed as "a failure to live up to one's responsibilities to the community",[134] and the West's climatic uncertainty could be interpreted as such a failure of responsibility. For Inuit, sin translates into *piunngittuliniq*, which Jaypeetee stated "means the creation of the not well-formed". He continued:

> Most Inuit still believe in that implicitly, and I strongly suspect that this is the case in Chesterfield Inlet. One becomes ill and elders seek out moral cause through discussions amongst themselves that non-Inuit are ignorant of. They've been told outright that this understanding is evil and against church teachings.[135]

Christianity disapproved of a response to sins which call for rituals that engages divinity within the creation. As Friesen explains, awareness of sin requires Native people "to submit themselves to the rhythms of nature" through ceremonies and ritual purifications that allow the individual or community to call out for spiritual help from the creation.[136] This is sacrilegious for most Christian missionaries and Inuit fundamentalists who have de-animated nature of anything but a final apocalyptic harvest of souls. In contrast, the northern evolution of IQ – through medieval warming, *Little Ice Age* and industrial warming – reveals a cyclical apocalypse which needs to inform cultural responses.

This IQ-Christian view of the West's climatic uncertainty also highlights a third Native interpretation of sin as being the result of sorcery that, in the past, was attributed to the work of shamans and missionaries. At the time of contact, many Natives interpreted unexpected ecological and weather changes as the result of a conscious sorcery that spiritually adept people could employ for their own benefit, or for the remunerated benefit of someone else. While sorcery's dynamics will be discussed more fully in the hermetic act, contemplating it here in relation to Christian missionaries who were sometimes equated with shamanic sorcerers offers an introductory conception of Western colonialism as an essential discipline in a climatic sorcery that expands the global population of the newly stupid.

For Inuit, the shaman was an intermediary with the spirit world who could enter into a ritual trance to ask Sedna, Mother of the Animals, to release the animals which disappear when people commit sins that are out of order with the cosmos, or engage the power known as Sila to "end a storm by a complicated ritual involving the aid of his helping spirits".[137] But shamanic powers were not only used in healing, for William Noah explains that this power

could also be used to kill.[138] Joanasie Qajaarjuaq similarly states that bad shamans or sorcerers could "use their spiritual helpers to kill other people out of hatred, revenge, and jealousy" so as to take what others have:

> The shaman concentrates on destroying a person behind his back. They target those they envy over a period of time through the tunnel of hate, until the shaman has the family in the palm of his hands. Then he appears to a family member making it known that he has the whole family in his power and can crush any member he chooses.[139]

Colonialism replaced shamans with missionaries and political functionaries who took on this covetous sorcery that today manifests the apocalyptic changes of the West's climatic uncertainty. In Chesterfield Inlet, these changes were described as being related to the pollutants affecting wildlife, garbage on the land, animal movements and weather changes. Though this assessment may seem naïve to most researchers, it is the case that this Western-mediated northern warming is merely the latest ecological disruption of Inuit culture which was preceded by other colonial disturbances based in this intercultural relationship.

The climatic apocalypse intuited by IQ-Christianity is a function of a fundamental Western colonialism that requires all people, cultures and beings to partake in this mission by ensuring that people cannot "hear" cultural and ecological others. A diagnosis of being "without ears" does not only apply to gas sniffers, for the West's belief in the civilizing mission continues today in the form of oil development, despite its potential climatic disruptions. Perhaps the long-term effects of mechanically consuming fossil fuels and inhaling their smog in urban centers since the Industrial Revolution has maintained a Western culture filled with people who also cannot hear the surrounding cultural and ecological voices. This lack of awareness is the basis for converting people into a sorcery that is synonymous with the West's climatic uncertainty, and which today seems capable of confirming for fundamental believers a Christian apocalypse. Contrasting this fundamentalism, the IQ-Christian view I heard in Chesterfield Inlet suggests that nature's wilderness and today's climatic changes are

moral responses to a Western sorcery that has locally and globally manifested the stupefying alienation of people from the cycling relations of the divine in the creation.

My interest in IQ-Christianity initially led me to miss one important detail from Simionie's grandmother about what to do when the animals come north: "leave it in your heart and your mind". Musing over the relevance of this passage to an IQ-Christian climate response, I came across a 1990s conference of Inuit elders that agreed upon one defining feature of IQ as "using heart and head together".[140] This seemed to be what Simionie's grandmother was suggesting, but it still didn't add much clarity to my climatic thinking. I asked Jaypeetee what these references to the heart and mind could mean. He responded:

> In IQ, it is believed that the physical body is aware of the environment way more than the conscious ego - which one must regard with a scepticism and forbearance. Inuit believe that the body will crave and visualize what it physiologically and spiritually requires to heal the body. I would suspect that what Simionie is saying is that… the human heart has the capacity to perceive messages that the ego has up to now ignored.[141]

He added that, in IQ, healing first requires listening with a humble heart, followed by reflection that gains insight into the issue, and ending with the gathering of strength to do "what we know to be right".[142] The practice of "using heart and head together" is a way of hearing a broader range of voices from cultural and ecological others, gaining insight and knowledge and then acting in a way that is reflective of that revelation. IQ-Christianity would appear to be a function of this approach that stretches back to the cyclical beginnings of Inuit in the Thule-Dorset marriage, and can today still guide some Inuit who are struggling through the stupefying apocalyptic changes of the West's climatic sorcery.

8 ᓯᓚ ᐅᖃᖅᑎᑦᓂᑦ ᐱᓕᒍᒍ ᓯᓚᒥᑦ ᓯᓚᑐᓂᖅ
The Weather Wisdom of Sila

ᖃᐅᐸᒪᓵᓚᐅᖅᓯᒪᔪᖅ ᖃᓄᖅ ᓯᓚ ᐊᓯᑭᖅᑉᓕᒪᖏᓪᓕ. ᐅᖃᐅᓯᖃᖅᑉᓚᐅᖅᓯᒪᔪᑦ
They use to know how the weather is changing. They
ᑕᒪᑐᖏᓐᓄ ᐊᒻᒪ ᖃᐅᐸᒪᓵᕆᓂᖅ ᖃᓄᐃᔅᑐᓚᔅᓂᖏᓂᖅ. ᑭᓯᐊᓂ ᒪᓐᓇ ᐊᖅᓯᐊᓕᖅ
would say something about it and know ahead. But now
ᐊᖅᐸᕆᔨᵃᓂᖏᒪᒍ, ᖃᐅᐸᒪᓇᑭᵃᓂᖅᑐᖅ ᖃᓄᐃᔅᑐᓚᔅᓂᐊᖏᓐᓄ ᐊᓂᒍᖅᑉᑦ ᐃᑲᖏᖅ
it is so different, you cannot say what is going to happen
ᐅᕐᓵᔭᵃᓂᑦ ᐅᕐᑎᐊᑭᖅᑲᓂᐊᖏᖅ ᐅᑦᓕᒥᑦᓱᐃᵃᓇᖅ.
in an hour or later in the day.

Andre Tautu in Chesterfield Inlet, October 2006

ᓯᓚ, ᑕᐃᒍᑎᑦᖃᵃᖏᓕᓚᖅ ᐊᖅᐸᕆᵃᖏᓕᑦᓕᒍ
Sila, means 'weather,' and there is no term to
ᑕᐅᖅᐅᐸᔨᐸᑎᕆᔨᵃᓇᖅᑕᖏᓐᓄᑲᓂᖅ.
distinguish between weather and climate.

D. Riedlinger and F. Berkes 2001

ᓯᓚ ᑦᵃᓇ ᓴᵃᖏᓕᔪᑦᓕᓂᓂ ᐊᓂᔅᓂᓗᓴᐅᐅᔭᖅ, ᒪᑭᑕᑎᑦᑎᐸᐅᓵᖅ ᓯᓚᔅᓵᐊᖃᖅᔅᕕᒋᓗᓂᖅ,
Sila is a strong spirit, the upholder of the universe, of the weather,
ᓯᓚᒍᑦ, ᐃᓚᓴ ᐅᒪᓵᒋᓗᓂᑦ ᓯᓚᔅᓵᐊᖃᖏᑦᑕᑐᓂᑦ - ᓴᵃᖏᓕᓂᔪᖏᓐᓄᓗᓂᑦ ᐅᖃᐅᓯᖏᓐᓄᑕ
in fact all life on earth – so mighty that his speech to man comes
ᐊᖏᔪᑎᒧᖃᑦᑕᖅᑐᖅ ᐅᖃᐅᓯᑐᐃᵃᓇᐅᖏᓕᑐᖅᓴᑦ, ᐊᒻᒪᑦᑕᐅᖅ ᐊᓂᓚᖅᓴᑦ, ᖃᵃᓂᖅᓴᑦ,
not through ordinary words, but through storms, snowfall, rain showers,
ᒪᔅᓴᖅᓴᑦ, ᐃᒧᔪᑦ, ᑕᒪᐃᑎᔪᑦ ᐊᖃᖅᔪᑎᖃᖅᑐᑐᓂ ᐊᖏᔪᑎᐅᐸᑦ ᑲᐸᐱᐃᓕᖏᓐᓄᔪᑦ, ᐅᕐᓵᔭᵃᓂᑦ
the sea, through all the forces that man fears, or through sunshine,
ᓯᕿᵃᓂᖅᓴᑦ, ᐅᖃᓕᐊᖅᓴᑦ ᐅᕐᓵᔭᵃᓂᑦ ᓯᑭᓯᓚᓴᖅᓴᑦ.
calm seas or small, innocent children.

Najagneq, speaking to Knud Rasmussen in the 1920s

Much of my early correspondence with Jaypeetee centered upon the relevance of the Inuktitut term *Sila* in understanding the West's climatic uncertainty. In contrast to Jaypeetee's ability to synthesize an IQ view of Sila based on northern experience and elder understandings, the knowledge I brought to these dialogues derived from two academic disciplinary extremes that seemed incapable of coming together. At one end was ethnographic research of Inuit culture, such as that of the Danish and Inuit Greenlander Knud Rasmussen and the *Fifth Thule Expedition* of the 1920s. In this ethnographic research Sila was understood as the spirit of the air,[1] a mystic power which permeates all of existence,[2] and later as a god-like "Supreme Being".[3] A world apart sat contemporary research which engages IQ as a means for documenting northern climate changes and Inuit adaptations, with Sila consistently referred to as an Inuktitut translation for what Westerners define as the weather.[4] These diverging interpretations of Sila revealed to me a significant problem in intercultural climate research, one that Riedlinger and Berkes highlight as being due to the lack of "conceptual frameworks on how to bridge the gap between Inuit knowledge and western science".[5] One mitigating factor in this cultural divide is the West's systematic fragmentation of knowledges into isolated disciplines that, as Smith related in the introduction, are foreign to Native experience. My research would traverse this intercultural gap by bringing these different Western views of Sila into a climatic thinking that engages IQ dialogues with Jaypeetee and Chesterfield Inlet.

By the time I arrived in Chesterfield Inlet to facilitate the workshop Jaypeetee's emails highlighted Sila as a concept that I wanted to hear more about, and thus a number of quotes from both disciplines were made ready for the dialogue. With my preparations complete, I relaxed into the hotel room and caught a flicker of light out of the corner of my eye. I was

drawn to the window where I saw the *aurora borealis* hovering above the Hudson Bay's dark waters. This northern light show is described by Western science as a unique confluence of forces. The Sun radiates a solar wind of electrons and protons which life on Earth is protected from by a moving molten center that manifests a magnetic field around the planet. Climate scientist, S. George Philander, explains:

> The interactions between the Earth's magnetic field and the solar wind give the magnetic field lines the shape of a comet. The magnetic field deflects most of the dangerous particles in the solar wind away from Earth and guides the more determined ones toward Earth's polar regions. There they meet their nemesis, the atmosphere, in a fiery and spectacular display - curtains of light that unfold over thousands of kilometers.[6]

This interaction of light, geological movements, air and polar regions help, in Philander's opinion, to "explain phenomena such as the greenhouse effect and the thermal structure of the atmosphere" by highlighting the climate's complex relations.[7] This *aurora borealis* symbolized for me those intricate ecological interactions of a climatic hierarchy that has brought IQ and interdisciplinary science into a more dynamic relation that may allow Sila to enlighten the West's climatic uncertainty.

Moved by the marvel outside my window, I realized that the need to ask others for help in understanding is a lesson in humility concerning the phenomenal limits of knowledge. Not only is IQ intimately related to a vast land of living knowledge that is beyond my experience, but I carry cultural transmissions which continually call me to southern Canada's particular Western view. In my room this reality was symbolized by the television's stuttering light images which transmitted from my urban Toronto milieu in the south, and which contrasted the blue-green waves dancing across the stark blackness of this Chesterfield Inlet night. All I could do in this northern place was ask for guidance in looking out the window, perceive the brilliance that intimates something broader than either the ethnographic or climate

change research transmissions on Sila, and then offer this understanding to my evolving climatic thinking. That was the approach I took to Chesterfield Inlet, and in my email correspondence with Jaypeetee that went back and forth between the north's observable *aurora borealis* and my home within Toronto's perpetual light. Our emails danced through dialogues on Sila that attempted to bridge the intercultural gap so as to enlighten what I heard in Chesterfield Inlet and represent an IQ view of the West's climatic uncertainty.

Sila is Changing

My introduction to Sila occurred while reading the Inuit ethnography of Rasmussen in an Anthropology of Religion course during the early 1990s. Almost a decade later, it came as a surprise when Sila again presented itself in the study of climate change. Six months prior to hearing Jaypeetee lecture at York University, I came across a documentary on Inuit observations of climate change called *Sila Alangotok*, which was translated as "weather is changing".[8] The film engages Inuit residents of Sachs Harbor in Canada's Northwest Territories concerning their observations of ecological changes that seem connected to an overall warming trend in the Arctic. The documentary was intriguing because it highlighted a kind of certainty among these Inuit that something was happening with the weather. This certainty seemed to me to contrast the many public surveys which indicate many North Americans feel uncertain about the reality, nature and potential impacts of climate change.[9] By the time I saw *Sila Alongatok* the act of climatic thinking had also left me with an overbearing sense of uncertainty, to which these Inuit voices offered a contrast based upon the ecological sensitivity of an IQ that was at the northern center of the West's climatic uncertainty. As I was to learn most directly in Chesterfield Inlet, northern Sila changes have an observable quality that provides Inuit with certainty that something is happening.

During the workshop participants shared with me many observations, including declining inland water levels that are affecting arctic char populations, a northern migration of

flora and fauna, and rising numbers of polar bears around the community. These and other changes were interrelated to what they sensed as a general warming that is making the weather increasingly unpredictable, and life on the land more precarious. The increasing storms, extreme cold and hot days, and unexpected melting of ice are challenging a subsistence life based on IQ. Early in the workshop Casemir spoke to the issue of changing weather in a way that resonated with Andre's introductory concern about IQ's future viability:

> They use to know how the weather is changing. They would say something about it and know ahead. But now it is so different, you cannot say what is going to happen in an hour or later in the day. It is not like a hundred years ago when IQ could predict. You don't know. Right now it is so different. You will get good weather in the morning and go out on the land because of that, and then get stuck on the land because of the weather changing.

Over the course of two days, I heard variations on Casemir's observation. Andre explained that the weather and seasons are "hard to predict anymore", and there was a general sentiment that the weather changes had become fast and extreme. These voices were just as certain that something was happening to the weather as the voices heard in *Sila Alongatok*, but the changes themselves were increasing their uncertainty about how to approach Sila.

In my reviews of Western climate change research with Inuit, I could only find Sila translated as the weather. In the research led by Thorpe, Kitikmeot elders are described as using *Hila*, a regional variation on Sila,[10] as a translation of the weather.[11] The same research group which produced *Sila Alongatok* states that "observations of climate change by people in Sachs Harbour are based on their knowledge of the weather, or sila".[12] In another related paper, Riedlinger and Berkes note that "sila, means 'weather,' and there is no term to distinguish between weather and climate".[13] In contrast, Western researchers make a clear distinction between weather and climate through their respective disciplines of meteorology and climatology.

While the *Oxford Dictionary of Weather* describes climate as using statistical information about "the variability of weather conditions prevailing in a particular region or latitude zone over a specific period of time",[14] weather is the immediate impact of "temperature, humidity, wind, pressure" on people and ecological region in the form of storms, clear days and everything in between .[15] Reflecting upon the interconnections between climate and weather, Collier and Webb describe the Earth as "a weather machine" that redistributes the Sun's energy through atmosphere, land and ocean in immediate and localized phenomena called weather and broader patterns referred to as climate.[16] Philander also explains that "the atmospheric circulation" which globally redistributes the Sun's energy and Earth's waters in the form of weather "plays a central role in the design of the climate tapestry".[17] The scale of this climatic tapestry is not only temporally longer than the weather, but is also spatially broader, such that a region's latitude combined with geological factors, such as being inland, coastal or northern, can significantly impact the more localized changes in weather.[18] With the West's climatic uncertainty, northern oscillations are expected to undergo significant changes largely because of the region's proximity to shifting ice and oceans which will interact with other scales of the climatic hierarchy to impact localized Inuit experiences of Sila.

While climate change researchers most often interpret Sila as weather, I was reminded of Riedlinger and Berkes' statement about the cultural gap in knowledges. Their comment resonates with Fox's concern that "although many northern scholars acknowledge how deeply Inuit are tied to the land in terms of subsistence, knowledge, culture, and spirituality, they often fail to address the latter two themes in discussions related to environmental change".[19] Other indigenous researchers have made similar critiques concerning the narrowing of Native knowledges to Western classifications of traditional ecological knowledge.[20] Ethnographic literature on Sila seems to confirm these concerns, for an interdisciplinary perspective suggests that Western views on weather may simply be one dimension of this Inuktitut term.

Though limiting research biases is part of the intercultural barrier in understanding Sila, it is by no means the only issue. Offering another perspective on this problem is Ernsting's conversation on Sila and the weather with an Inuit elder by the name of Naqi Ehko:

> They were dependent on good weather, on winds and ocean currents, in other words they were dependent on Sila. An Inuit elder such as Naqi Ehko might describe Sila as the forces which push or pull a person through life, or simply as wisdom. But his meaning is no longer understood by most Inuit youngsters. They have lost the land skills of their ancestors and many are now struggling with the Inuit language Inuktitut.[21]

Continuing this train of thought, the Inuit philosopher Rachel Qitsualik writes that Sila is not simply being narrowed by the reductionary power of Western science and the lack of translatable terms.[22] Sila's narrowing is also taking on a momentum of its own that is very much related to Naqi Ehko's concern about the degradation of Inuktitut meanings amongst the future generations of Inuit. In Qitsualik's words:

> Although translated today as "air" or "weather" or even "outside," the modern translations of *sila* only convey to non-Inuit ideas associated with English words. When I speak of the "air" to a southerner, what immediately comes to his or her mind is the idea of invisible, breathable gas: the nitrogen, oxygen, and other gases that make up Earth's atmosphere. Today, the vast majority of Inuit will think of the same thing, as well as wind and weather.[23]

It seems that it is not only the assumptions taken into climate research that are narrowing the view of Sila, but rather IQ's continuation is also being threatened by the power of Western culture to affect Inuit. Because of these various intercultural blocks in coming to an understanding of Sila, my emails to Jaypeetee and dialogues in Chesterfield Inlet drew upon the incongruency between climate research and ethnographic accounts in asking for clarity on how Sila could be related to the weather and have spiritual significance.

The Sila Hypothesis

There was one passage which refers to Sila in Rasmussen's research that stuck with me for years. He spent a significant amount of time interviewing Inuit shamans, and one by the name of Najagneq offered the following description of the Inuit cosmos:

> Sila [is] a strong spirit, the upholder of the universe, of the weather, in fact all life on earth - so mighty that his speech to man comes not through ordinary words, but through storms, snowfall, rain showers, the sea, through all the forces that man fears, or through sunshine, calm seas or small, innocent children... When times are good, Sila has nothing to say to mankind. He has disappeared into his infinite nothingness and remains away as long as people do not abuse life but have respect for their daily food. No one has ever seen Sila. His place is so mysterious that he is with us and infinitely far away at the same time.[24]

The mysterious nature of this quote left a deep impact on me, such that when engaging climate research which translates Sila as "weather" I instantly recalled this other view. Placing this ethnographic research beside the climate interpretations, I entertained the possibility that Inuit are not merely talking about Western views of weather when referring to Sila. Perhaps for Inuit Sila changes are also understood as a spiritual force that is responding to the global scale of the West's climatic uncertainty.

Just a few hours were left in the workshop when I put the Rasmussen translation of Najagneq on the overhead for discussion. I listened intently as Andre spoke up: "I don't know. I was raised by my grandparents and I never heard a story about Sila. It is not from the Inuit history or stories". A little taken aback, I asked Andre and the other participants if Rasmussen's description of Sila was wrong. Andre spoke again: "Yeah. This is rubbish." Based on his experience, there is no god or spirit-like being in Inuit experience known as Sila. When Jaypeetee read the transcripts concerning this comment about the Rasmussen quote, he felt

that Andre was by-passing the larger philosophical context of Sila which would limit my ability to understand the implications of what was being said. Jaypeetee agreed that Sila was not an anthropomorphic being that can be gendered as a "He", as it is done in Rasmussen's work, and that Sila is also not to be found documented in any Inuit stories or art. But in his view, Sila does have a spiritual reference which is meant to contextualize the physical manifestation of human relations within that which manifests broader ecological processes like the weather. In the transcripts Jaypeetee also came across Simionie Sammurtok's voice attempting to clarify the meaning of Sila: "Sila, that is the weather, weather wise, climate." He felt that this was an important reference, and explained why:

> I think he's referring to Sila as "wisdom" because he's listing what the word means. Climate has to do with cycles of change within Sila. Sila... moves and is without form of its own. Sila is really a no thing because snow is not Sila, rain is not Sila, wind is not Sila, clouds are not Sila - they occur in Sila... Sila is like empty space.[25]

Contrary to simply throwing out everything that Rasmussen and other ethnographers had deduced from their discussions with Inuit about Sila, Jaypeetee offered a way of clarifying this research with a sense of IQ nuance that is relevant to northern weather.

Following one of these email exchanges, I sent Jaypeetee an article by Daniel Merkur which reviews much of the ethnography completed over the past century surrounding the term Sila.[26] In this analysis, Merkur describes Sila as an invisible power that indwells order into the cosmos and manifests in phenomena like weather. He uses the Inuit concept of indweller to describe Sila so as to discriminate from the idea of a supreme being. An indweller is described by Merkur in the following way:

> Basic to the concepts of the indwellers and spirits are their characteristics as numina. They are living presences active in the world. They manifest themselves in the miraculous events of the physical world, the unbidden inspiration of the mind, the dreams of sleep, and the visions of ecstasy... As powers, they are perhaps more

closely analogous to Western concepts of the forces of gravity and magnetism than to concepts of angels, demons, and God.[27]

Taking one more step in his clarification of Inuit cosmology, Merkur classifies Sila as the indweller of the air, a counterpart to *Sedna*, the indweller of the water. Neither supreme beings nor "personifications of natural forces", these indwellers "are the powers that constitute nature... an unpredictable being that may be benevolent, neutral, or actively malevolent as the mood strikes it".[28] His research also suggests that Sila has a role in punishing taboo violations through the use of storms and other weather anomalies. As if responding to Andre's comment concerning the lack of Sila stories, Merkur proposes this may be "because many are comic tales and/or negative examples" and as such "are not told about Sila" directly.[29]

Jaypeetee responded to the Merkur article by saying that he liked most of the reviewed subject matter, but felt that he ultimately "emphasizes the wrong things or in an inappropriate way".[30] The first problem he saw was the continued use of a gendered "he" when referring to Sila, as is common throughout the ethnographies. Jaypeetee felt it would be more appropriate to refer to Sila as an "It", but an "It" that is not objectified as in common English parlance. "It" has to take on a sentient and animate reference so that Sila is recognized as potentially responsive to the other powers and beings of what has been defined here as the Earth's climatic hierarchy. The Native scholar George Tinker similarly asserts that indigenous terms are not easily translated into English without losing the breadth of their specific cultural meaning.[31] He views God as one particularly problematic term, for Christian conceptions often carry the baggage of humanlike attributes such as emotions of love and anger, as well as gender. While North American Native traditions offer a diversity of cultural views on God, Tinker explains what they have in common is a characterization which lacks gender and purely human motives. In his words, "what Christians would refer to as God is understood as a spiritual force that permeates the whole of the world and is manifest in countless ways in the

world around us at any given moment and especially in any given place".[32] Jaypeetee said something similar when he reminisced about his father and Sila in one email:

> I thought of my dad and the mythology that allowed him to make sense of his world; his spiritual regard for Sila… He only knew that God (Sila) is a living, breathing immanence - a reality, not myth - and his worship was in the active partaking of that being.[33]

These critical perspectives point to one problem in the anthropomorphizing of Sila which has seen many ethnographers and religious scholars give "It" a gendered reference, and thus miss Sila as an immanent presence that interconnects ecologies and people.

Moving beyond the gendered representation of Sila, Jaypeetee also had problems with some of the interpretations and their implications. For example, Merkur interprets the Inuit phrase "Silaup inua" as meaning the "owner of Sila", that someone has taken hold of Sila. In contrast, Jaypeetee corrected Merkur's anthropocentric interpretation of this phrase, stating that what it actually means is "that the person is owned by Sila".[34] He explained that Sila is not our personification, as represented in much of the ethnographic literature, but "we are the personification of Sila". In one of his articles, Jaypeetee outlines the importance of recognizing that Sila is a powerful root word in Inuktitut which delineates between the being of Sila as "Silarjuaq" and that wisdom which can attend to "It" as "Silatuniq." To understand what Jaypeetee is getting at here it is helpful to first consider the way in which Inuktitut joins Sila together with various root terms or morphemes to offer different nuanced meanings.

In the *Inuktitut Living Dictionary* there are 217 cited cases where Sila is joined with other root terms to provide various meanings, many of which concern the weather.[35] For example, Silaaqsiaq translates as "darken or change in outside air", while Silarqiqpuq means "calm without wind". Adam Qavviaktoq used a regional variation of Sila in combination with other terms when talking with an ethnographer about consulting shamans in times of bad weather by using the term "hilaqirhainahuaq", "he must make the good weather come".[36]

Returning to the specifics of Jaypeetee's reference to Silatuniq as wisdom, the Inuktitut meaning for "tuniq" is the first peoples who were in this northern land before the Inuit. When combined with Sila it comes to refer to a practical wisdom for living within this land. While an IQ view of Silatuniq will be considered in more detail later, for now we return to Jaypeetee's cosmological expansion of Sila with the addition of "rjuaq".

This root term refers to something which is big, great or large, and when combined with Sila's reference to the substance of life it results in the following description by Jaypeetee:

> Silarjuaq is without a creator. Beings - whether they be animal, human or spirit - become and pass away within it: Silarjuaq just is. Silarjuaq is also in a state of constant flux and change - reflecting the human mind... Silarjuaq is seen as a sentient being... To outsiders (e.g. Rasmussen), Silarjuaq would be said to be anthropomorphized, but some Inuit would say that it is we living beings that are Silarjuapomorphized. Silarjuaq has natural rhythms and cycles as seen in the changing seasons... everything is mutable - only sentience, order and change are constant.[37]

His further wedding of Sila with English terminology in the idea of Silajuapomorphization recognizes a broader living context that informs human lives, rather than that reality being secondary to human conceptions. From Jaypeetee's view, Sila surrounds and permeates Inuit and their communities as an ever-moving and immanent force, with its most commonly recognized manifestation being in their experience of the weather.[38]

While IQ is helping climate researchers to document ecological changes and potential adaptations, its broader implications for Western science – as represented in Silarjuaq, Silatuniq and Sila – will continue to be limited until linguistic misunderstandings related to the legacy of colonial power relations are addressed. Up to this point these IQ dialogues have revealed three intercultural power dynamics which are narrowing an immanent and sentient understanding of Sila. The first is related to Western climate change researchers and

ethnographers who project limited assumptions on the sentient immanence of Sila. Contrasting Western climate science's predominant focus on ecological processes, the IQ view of Sila experiences these processes as spiritual forces that animate the cosmos in regional-specific ways. In this animated context, Jaypeetee states that IQ looks upon experienced, shared and discussed knowledge as the "most reliable and relevant" in determining how people will plan and act.[39] The IPCC is also a process of discussed knowledge, though it is currently limited to world governmental representation in collaboration with a global scientific community whose interdisciplinary knowledge is predicated upon Western assumptions.[40] These Sila dialogues challenge processes like the IPCC to include a broader intercultural representation of the West's climatic uncertainty as a means for transcending the often abstracted assumptions of Western researchers.

The second limitation on viewing the breadth of Sila is due to the obscuring of Inuit culture by various colonial forces, including cultural pressures on Inuit youth. Qitsualik provides a historical view on Sila from which to contextualize "Its" current narrowing amongst Inuit youth.[41] She states that originally the act of breathing made Inuit notice that something in the world outside us was taken in, and that "It" was "the animating principle of life." From this recognition it was "concluded that life itself was in fact the breath, the sila, and that when the *sila* was drawn into a body, it was alive and animate". Continuing, Qitsualik proposes that in time Sila took on the form of an "incorporeal power" that manifested "Itself" in breath, weather, and the power behind the world's movements. Inuit came to view Sila as "a raw life force that lay over the entire Land; that could be felt as air, seen as the sky, and lived as breath." Within this historical context, some researchers may suggest that the current narrowing of Sila to "weather" is simply the current adaptation of Inuit to a context of global relations. Confronting this relativistic stance on Inuit changes is the recognition that the globalization of Western culture deeply intertwines today's northern climatic changes to this

narrowing of Sila, thus highlighting once again the cultural dimension of the West's climatic uncertainty.

This climatically increasing intercultural pressure is the third narrowing process experienced by Inuit. Concerns of social justice are often marginalized in mainstream climate change discourse,[42] yet the side-effects of largely Western industrial activities are climate changes that will disproportionately impact Inuit ways of living. As both Andre and Casemir pointed out, Inuit lives are being pressured by cultural and environmental forces into a narrowed IQ understanding of Sila's climatic manifestations, with the result being a reduced range of possible adaptive responses. David Abram describes a lengthy historical process in Western culture which, in mimicking this narrowing of Sila amongst Inuit, offers some important insights on the relation of today's changing climatic hierarchy to this colonizing process.[43] He argues that the experiential basis of language in Western cultures was gradually abstracted over time into increasingly formulaic representations that lost their broader relational meaning to the actual air which surrounds life. In his words:

> We might say that the air, as the invisible wellspring of the present, yielded an awareness of transformation and transcendence very different from that total transcendence expounded by the Church. The experiential interplay between *seen* and the *unseen* - this duality entirely proper to the sensuous life-world - was far more real, for oral peoples, than an abstract dualism between sensuous reality as a whole and some other, utterly non-sensuous heaven.[44]

The subsequent dissociation of the spirit of air and the psyche has been affected through forms of social organization and knowledge that limit sensory contact with a surround that is not fully knowable. Abram's thought sent me searching for something Jaypeetee had written:

> A mature mind is a reflecting mind that is intimately immersed in its context. The ideology of reduction has forgotten this and Science is lost in its angst affecting

everything everywhere. This kind of alienation is extreme and its effects complex, but it's a human condition, a psychological condition that I hope can be transcended.[45]

Both Jaypeetee and Abram imply that the experiential marginalizing of the unseen context in Western knowledge production is a primary factor in my culture's globalization of its climatic uncertainty.

This historical interconnecting of the West to Sila's present narrowing amongst Inuit is extended by Abram's argument that "the changing atmosphere is not just one component of the ecological crisis, to be set alongside the poisoning of the waters, the rapid extinction of animals and plants, the collapse of complex ecosystems", but rather all of these issues are primarily "interconnected facets of an astonishing dissociation".[46] He states that "the most profound expression of this oblivion" is to be found in the Western world's minimizing of the air we breathe as an empty space that denies "our thorough interdependence with the other animals, the plants, and the living land that sustains us".[47] The result of this dissociation is that Westerners tend to situate themselves "within a purely human set of coordinates", such as national patriotism, thus lending their "lives more to consolidating, defending, or bewailing the fate of these ephemeral entities than to nurturing and defending the actual places that physically sustain us".[48] The way out of this narrowing Western experience is for Abram dependent upon again becoming aware of "our immersion in the invisible air" so that the "breathing landscape is no longer just a passive backdrop against which human history unfolds, but a potentized field of intelligence in which our actions participate".[49] This act does not require "going back" to the life ways of an oral culture which recognizes the interrelation of breath, words, air and weather, but rather is simply about "coming full circle, uniting our capacity for cool reason with those more sensorial and mimetic ways of knowing, letting the vision of a common world root itself in our direct, participatory engagement with the local and the particular".[50] These IQ dialogues on Sila offer exactly such a view on the changes in the

climatic hierarchy, and on a Western historical dynamic of making the "newly stupid" by continuing to narrow human responsiveness to air, weather and climate.

As I engaged these IQ dialogues as a means for getting around these three narrowing forces, it became clear that Sila was neither defined solely as the weather nor as an anthropomorphic God or indweller. Offering a similar view, Tinker states that many Native knowledges conceive and experience divinity "as a spiritual force that permeates the whole of the world" rather than being attributed directly to either natural phenomena or a God.[51] Jaypeetee expanded my view on Sila as a spiritual force by explaining that "Silarjuaq is a consciousness" that is not solely of a causal and responsive nature, but can include mood swings that to rational thought have no apparent reason.[52] From Jaypeetee's view, the "assumption of sentience changes things in a systemic way because it forces one to think of responsibility to self and the other, and it also contextualizes the self into its environment: the Sila hypothesis".[53] This proposal confronts a Western view of climate change as an external process that can be predicted, controlled and even profited upon, for the "Sila hypothesis" prioritizes an ethic of social responsibility towards a sentient spiritual force that emerges from the climatic hierarchy as a northern response to the West's climatic uncertainty. This understanding led to a dialogue with Jaypeetee concerning how Inuit approach this sentient sense of the north's weather and climate.

Wisdom from the Great Loneliness

In one email exchange Jaypeetee challenged my early writing on climate change by asking why there was no mention of wisdom. He thought this was puzzling, but reflective of Western thought on environmental issues. His critique was particularly relevant from a cultural perspective where Sila responds to the West's climatic uncertainty with northern weather and ecological changes. While a concern with wisdom is largely unrecognized in climate change research, Jaypeetee felt that wisdom, or Silatuniq in Inuktitut, was central because in IQ that

which is cultivated in the mind will have effects in the world, and that which is cultivated in the world will affect the mind. To be wise is to allow Sila "to own us", to allow that uncertain sentience to inform climatic thinking so that human responses can embody northern wisdom, Silatuniq. In Jaypeetee's words: "Wisdom is a specific inquiry as to the context and consequence of applying knowledge and/or how our interacting with the surround affects that surround".[54]

This interconnection of "Sila without" and "Sila within," of the cosmos and the mind, is not unique to Inuit culture. Abram describes the Navajo view of the air as embodying traits that Westerners would only ascribe to the human mind.[55] In his words:

> Yet by attributing these powers to the Air, and by insisting that the "Winds within us" are thoroughly continuous with the Wind at large - with the invisible medium in which we are immersed - the Navajo elders suggest that that which we call the "mind" *is not ours*, is not a human possession. Rather, mind as Wind is a property of the encompassing world.[56]

Closer to Inuit territory, Richard Nelson describes the Koyukon as personifying the weather and the wind with an awareness that is responsive to people's actions, even changeable by those who have a deep understanding of its essence.[57] Similarly, the most ancient Latin understanding of *spiritus* associates the breath "with the animating power of life" and "the life-sustaining air" that unites "inner and outer" in a spirit of continuous mediation.[58] These diverse cultural descriptions of the air as a spiritual force that surrounds and permeates life resonates with aspects of Sila, as well as with elements of the air's climatic thinking.

For Western climatologists and meteorologists, the air of the atmosphere is a central force involved in the changing dynamics of climate and weather. In this science, air is the mixture of the atmosphere's gases which, as air masses and humidity levels, come to influence weather over large areas.[59] Summarizing the relation of air to weather and climate, Philander states:

> The atmosphere on its own can produce the music we call weather, but to produce climatic fluctuations, it needs to cooperate with the land, water, and ice surfaces beneath it. This cooperation is possible because atmospheric winds both depend on and influence temperature patterns at Earth's surface.[60]

The weather is composed by a symphony of climatic forces: the Sun's solar winds and spots, the Earth's orbital cycles, oceans and atmosphere whose movements are steered by the Earth's rotation, air masses that redistribute heat and moisture at different rates, ice and regional topography, the breath of plants and animals, and the GHG metabolism of industrial societies. Collier and Webb describe these relational oscillations as "complicated harmonies",[61] while Philander refers to weather and climate as a musical instrument that "has modes of oscillation that are easily excited".[62] With the recognition that humans are influencing the climatic hierarchy's oscillations comes the implication that we are involved with the air, land, water and ice in producing this changing weather music. The everyday phenomenological relation of life to this weather music which allows the West's climatic uncertainty to unfold globally is expressed by Abram when he states that "we animals are breathing in" that which "the plants are quietly breathing out", and subsequently that which "we breath out, the plants are breathing in".[63] Based on this perspective, he proposes that the air "is the soul of the visible landscape, the secret realm from whence all beings draw their nourishment".[64] The air is the "most intimate absence from whence the present presences, and thus a key to the forgotten presence of the earth".[65] Just as air is the medium that intimately interconnects living beings to that which manifests as weather within the climate's broader cadences, it is also a symbolic medium that brings my climatic thinking and IQ together in search for a wisdom that can respond to the West's climatic uncertainty. For Inuit, this Silatuniq needs to be capable of responsively dancing with the regional manifestations of the north's changing weather music.

Jaypeetee described Silatuniq as a general capacity that anyone can access, though for Inuit it is often associated with the understanding of shamans who are particularly sensitive to

Sila's natural movements. Hugh Brody was led to state much the same thing after spending a number of years living in Inuit communities and learning under an elder. The awareness and attention that are of utmost importance for life in the Arctic helped him to realize that "the power of shamanism lies in a particular area and is not a way of understanding or influencing the world as a whole".[66] Shamanism, based on his experience, is a spiritual extension of "the hunter-gatherer's reliance on detailed information and great intuitiveness" because it "prepares the brain to work at its fullest, widest potential" while dealing with an uncertain environment.[67] With regards to this connection between Sila, Silatuniq and shamanism, there were two different texts that complemented my reading of Rasmussen. One was Joseph Campbell's *Masks of God: Primitive Mythologies*, and the other was Mircea Eliade's *Shamanism*. These works allowed me to begin engaging Jaypeetee's description of Silatuniq.

Campbell uses Rasmussen's writings on Sila as part of a cross-cultural analysis into those shamanic and mystic practices which bring individuals into contact with what he calls the divine darkness.[68] His interest is in how the shaman's rapture participates in a reality that is interpreted by everyday consciousness as the "secret cause" of tragedy and worldly fear. We earlier encountered the excerpt of Rasmussen's passage on Sila that is drawn upon in his analysis, but the context of the ethnographer's exchange with Najagneq needs to be more clearly defined to engage Campbell's interpretation. Rasmussen had just realized that Najagneq often fabricated stories and used trickery in rituals to mystify his presence when around community members. Because of this awareness he asked the shaman if there was anything in which he believed. Najagneq responded: "Yes, a power that we call Sila, one that cannot be explained in so many words. A strong spirit, the upholder of the universe", and, as quoted earlier, the shaman's words go on to recite the imbuing power of Sila as a mystery that "is with us and infinitely far away at the same time".[69] Rasmussen found Najagneq's words to resonate with those of other shamans he had met, such as Igjugarjuk from Baker Lake just inland from Chesterfield Inlet. He informed this Danish-Inuit ethnographer that the "only true

wisdom lives far from mankind, out in the great loneliness, and it can be reached only through suffering. Privation and suffering alone can open the mind of a man to all that is hidden to others".[70] For Igjugarjuk, this wisdom journey through suffering was undertaken during a shamanic initiation which entailed being left alone on the tundra in a small hut just big enough to sit cross-legged. Perched on a small hide which was to be his island upon snow that he was forbidden to touch, with limited food and water, and far from his community, Rasmussen relates the initiatory ordeal:

> Igjugarjuk declared that the strain of those thirty days of cold and fasting was so severe that he "sometimes died a little." During all that time he thought only of the Great Spirit, and endeavored to keep his mind free from all memory of human beings and everyday things.[71]

It was through this initiation that Igjugarjuk came into contact with his spiritual helpers and a Silatuniq that is found "out in the great loneliness" far from humanity, a spiritual pattern of entering the dark abyss which Campbell finds to be common across many cultures.

In Eliade's research, shamanic wisdom derived through prayer, ritual and séances helped Inuit to deal with collective problems related to hunting and the weather, as well as individual sicknesses.[72] Eliade explains that the shaman enters ecstatic trances to go on spiritual journeys aimed at attaining a wisdom that can re-balance people with their environment. Clarifying the purpose of these rituals and séances, Jaypeetee stated that the shaman does not seek "to remedy but to help rebalance, to massage the individual to its natural equilibrium with the environment".[73] Based on Campbell and Eliade, it seems that these shamanic practices for engaging the dark unknown are utilized to understand what is out of balance in human relations to the cosmos, with the hope of being inspired by a Silatuniq that can restore equilibrium.

The question still remains as to why the shaman's wisdom and practice was dependent upon "privation and suffering". Campbell's work proposes that cultural descriptions and

assumptions about the world can limit humanity's ability to relate with this power that gives, informs and takes lives. For Campbell, "the ultimate reference of religion is ineffable, [yet] many of those who live most sincerely by its mythology are the most deceived - this deception itself being part of the suffering and darkness through which the mind must pass before the Face-that-is-no-face becomes known".[74] The belief in an image undercuts the ability to experience the continual becoming of this existence, thus resulting in costly misinterpretations. Suffering in this initiatory context is merely the experience of letting go of those cultural and personal images that limit an engagement with this broader reality that eventually consumes all beings in their death. The shaman and mystic, according to Campbell and Eliade, have provided a social role of intuiting that which goes beyond the limits of human rationality and cultural assumptions for diverse cultures. An Inuit shaman's Silatuniq attends that sentient spiritual force which interconnects the north's weather, natural beings, respiration of plants and a child's laughter.

In Campbell's analysis this human need for participating in a cosmological connection which can consume knowledge is a serious methodological lacuna in contemporary Western culture.[75] This gap has allowed many scientists, anthropologists and missionaries to misunderstand the spiritual metaphors of other cultures. As we have seen, this problem has also manifested in the limited interpretations of Sila by climate change researchers, ethnographic-based research and even in younger generations of Inuit due to the colonial creation of the "newly stupid". Whether or not the analyses of shamanism in Inuit culture, as offered by Campbell and Eliade, were likewise flawed by their experiential limitations in relation to Sila and their own cultural assumptions, was a question that I posed to Jaypeetee during one email exchange. He started off his reply by stating that in his opinion Campbell's representation of Sila and shamanic knowledge was incisive:

> I truly believe in this Sila and the means with which Inuit shamanism accessed its depths and breadth through suffering and fasting. It is through suffering that the

> phenomenal self lets go and equanimity is achieved, clarity is achieved. Nature is indifferent; it cares nothing for our limited conceptions of "good" and "bad", "evil" and "beneficence". This insight can either kill us or liberate within us unbound creativity.[76]

Jaypeetee's response suggests that the suffering of the shamanic initiation was a process for letting go of those assumptions that limit human participation in movements which are essentially painful to the human body. This shamanic practice brings forward a Silatuniq that can transcend limited cultural assumptions that are out of balance with the world and increase suffering. As such, shamans carried out their practice to attain an understanding that was not available to all Inuit, as Jaypeetee related:

> Shamans are the sensitive people in so far as they're able to sense and perceive what normal people cannot or will not face... As such, they'd have been regarded with mistrust commensurate with their level of insight and sensitivity. They invented their own form of language, conducted investigations into the nature of reality through trance, acted as human vessels of cultural knowledge accumulated and spanning hundreds of years.[77]

In his view, Silatuniq requires allowing the air to quiet the mind so that human beings and cultures can be brought into a Sila relationship that "is fundamentally an ethical one, not economic".[78] The ensuing social difficulty is that such Silatuniq may not be in line with that which informs dominant cultural assumptions in everyday living.

On top of cultural assumptions, colonial pressures and climatic impacts, it appears the West's post-Enlightenment rejection of religious and shamanic ways of knowing reveals a fourth dynamic which narrows an understanding of Sila. This dynamic is based on specific shamanic actions which omit researchers and Inuit from this knowledge when they do not engage these practices. For Inuit, the shaman provides communities with a contextual understanding of their complex relations through an experiential translation of what Jaypeetee

referred to as the Silarjuapomorphization of a changing world. While this spiritual understanding is not completely exclusive to the shaman, as hunting provides many Inuit with an animate sense of Sedna's natural surround, the shaman's initiation into specific practices offers the community a unique professional who can fulfill the role of assessing Sila's depth. While Inuit ecological assessments are of value to Western research and Inuit, the shaman's broader sensibility of Silatuniq may be more important for dialogues that are concerned with responding to a climatic hierarchy that is the animated medium of the West's uncertainty. The purpose and spirit of these dialogues is personified by Jaypeetee's words: "What we have to learn to do is to listen to the pulse of Sila".[79]

Drawn to the Light of Sila

In his romantic journey into the *Arctic Dreams* of the expansive northern tundra, Barry Lopez relates that some people claim that the *aurora borealis* can be heard to make a whistling or crackling sound.[80] Some Inuit even suggest that these Northern Lights "will respond to a gentle whistling and come nearer".[81] For himself, these lights evoke "feelings of awe and tenderness" that draw the "viewer emotionally up and out of himself, because they throw the sky into a third dimension, on such a vast scale, in such a beautiful way, that they make the emotion of self-pity impossible".[82] These same lights drew me to an Inuit window on the climatic hierarchy that was much vaster and awe-inspiring than the Western post-Enlightenment messages which were flickering behind me during these Sila dialogues. Following the lead of the Chesterfield Inlet voices, the recitation of Inuit shamans and elders in ethnographies like that of Rasmussen, the philosophical musings of Merkur and Campbell, and IQ-based climate change research, my emails with Jaypeetee oscillated between Sila's narrowing into Western understandings of weather and IQ's expanding Silatuniq of a sentient spiritual force. This northern window on the light of Silatuniq is unfortunately being blocked by problems of cultural translation that are in concert with the continually expanding power of

Western assumptions. Since Inuit shamans traditionally fulfilled the role of transcending these cultural problems by entering into communion with Silatuniq, perhaps presently responding to the West's climatic uncertainty will also primarily require the rejuvenation of a Western wisdom.

In looking at the uncertainty surrounding Western culture's understanding of climate change it is important to recognize that this concept is just as nebulous for non-scientists as Sila is for non-initiated Inuit, especially those who have lost contact with IQ's Silatuniq. While an awareness of the breadth of Sila's presence is dependent upon the shaman's professional spiritual understanding, the social constructionist analysis of Demeritt makes it clear that Western representations of climate change have some distinct similarities.[83] As he clarifies, "neither the idea of a 'global climate' nor the phenomena that it designates are conceivable apart from the world-shaping networks of social practices, standardized instruments, orbiting weather and communication satellites, and computer models through which they are made manifest".[84] There is a recognizable symmetry between Demeritt's description of the scientist's professional knowledge of climate change in comparison to that of the broader population, and that of the shaman's knowledge of Sila in relation to the broader Inuit community. Where this symmetry comes to an end is with the IQ understanding of Sila as a sentient force that animates the climatic hierarchy beyond the controlling limits of rational conceptions.

Fortunately the divide of climate researchers from this animated cosmology of the Inuit is not all that large a leap, for scientific research has revealed a complementary knowledge of feedback loops, emergent properties and historical cycles that signify dynamically moving and interconnected Earth system.[85] These Sila dialogues suggest there is a need for the West's climatic thinking to take one more step and interconnect all of these phenomena to a human wisdom that can respond to Sila's northern and global changes. The shaman's Silatuniq offers guidance in taking this step as it moves beyond the interdependence described in Western notions of ecological systems theory, into a larger context of animated

forces that interact with humanity in a relational way that transcends rationality. This is a similar wisdom to that which some ecological and climate change scientists are struggling to articulate, as Weart does in proposing that "the climate in the future actually does depend in part on what we think about it".[86] Though this type of cultural self-analysis is an important step, it is still non-relational in the sense of listening and responding to the breathing air that musically animates weather and climate. Perhaps as with an individual who indicates hypertension, stress and anxiety by a rapid breathing that "results in an excessive loss of carbon dioxide",[87] the Earth's changing climatic hierarchy is showing the stress of Western GHG emissions. In the north these stressful respiratory changes can be seen as a response by Sila's air movements to post-Industrial Revolution actions which are out of balance with the climatic hierarchy's many beings and processes. While shamans have traditionally taken on that role of being sensitive to the nuances of Silatuniq for Inuit, for Western climate researchers of my urban ilk stuck within the Enlightenment's stuttering power the nuanced interconnections of shamanic experience, IQ and this northern ecology will likely always be beyond a climatic thinking which can simply gaze out this northern window in awe.

Just as the climatic hierarchy's many interrelationships brings my climatic thinking to the edge of that unknowable and responsive reality that Inuit have historically identified as Sila, it can also re-direct my research to a Western pre-Enlightenment wisdom which Campbell associates with the mystics.[88] Campbell thought that despite the diverging spiritual cosmologies of the Inuit shaman and the Western mystic, both these traditions see at the core of the world's suffering a divine "Yes" to life. They have a common understanding of wisdom as coming from participation in this divinely dark movement that is beyond rational thought, yet is the basis of existence. These Sila dialogues suggest to me that this commonality is something to be reached for in climatic thinking through a sharing that includes religious, spiritual and hermetic knowledges. By bringing the West's mystics, religion and environment scholars, and climate change scientists into a comparable interdisciplinary dialogue within the

other two acts as that engaged here with IQ, it may be possible to devise a Western-specific climatic thinking that affirms a sentient view of the climatic hierarchy. As with these IQ dialogues, this spiritual practice would inform a response that recognizes the West's climatic uncertainty as the sentient breath of Sila which today initiates us into northern wisdom from the great loneliness.

ACT III

Hermetic Contemplation

9 Iona's Sea-Road to North Atlantic Wisdom (600 – 1400 C.E.)

ᐊᐃᕇᓇᐅᐸ ᐃᒪᒍᑦ ᐊᖅᑯᑎᖏᑲ ᐅᐊᖓᓇᖏᓂᓂ ᐊᑦᓪᖏᑎᐅᐸ ᓭᓪᑐᓂᒍᑦ

ᓭᓪᓂᖅᓴᐅᑐᐃᖓᓇᓕᐊᖅᑲᖅᓴᖅ ᐅᖅᑲᓪᓂᓂ ᖃᐅᐳᒪᓇᖓᖏᖓᓂᖅᓪᓂᒍᒍᒍ
It might be more accurate to say that we cannot know God
ᔪᑎᐅᐸ ᐱᕐᔪᓭᖏᑲ, ᑕᐃᒪᓕ ᒐᖓᓇ ᖃᐅᐳᒪᓴᖅᓴᐅᖏᓚᒪᒡ ᐊᒻᒪ ᐃᓭᒪᒍᑦ
in his nature, since this is unknowable and is beyond the reach
ᑎᑭᑕᐅᕇᖓᓇᕆᓂ ᐅᕙᓕᔭᖓᓂᑦ ᐃᓭᒪᖅᓴᖅᓭᐅᑭᑎᖃᓂᖅᓄᑦ. ᑭᓭᐊᓂ
of mind or of reason. But we know him from the arrangement
ᖃᖅᐅᐳᒪᓴᕆᔭᐊᖅᓴᑦ ᐊᖅᑭᑭᓭᖅᓭᒪᖏᓖᓂᑦ ᓭᓇᓕᒥᑦ... ᔪᑎ ᑕᐃᒪ ᑕᐃᒪᒃ
of everything... God is therefore known in all things and as
ᖃᖅᐅᐳᒪᓇᖅᓴᖅ ᓭᓇᓕᒥᓂ ᐊᒻᒪ ᐊᐳᐅᐅᓇᓂ ᓭᓇᓕᒥᓇᓕᑦ.
distinct from all things.

Dionysius, fifth century

ᐅᐸᑲᑕᐅᓭᒪᖏᓚᔪᐊᑕᖅᓭᓇᓴᓂᖅ ᑭᒃᑯᓴᓇᑦ... ᐅᐸᔪᑎᓭᒪᔪᕐᐸᓕᐅᖅᓴᑦ
Sweet visits by angels... generally came to St. Columba
ᐃᐳᕇᓇᐃᑦᑐᖅ ᑲᓪᒻᐸᒍᑦ ᐅᑭᐅᖏᔪᑎᑦᓗᔪ ᐅᖏᓂᒃᓄᑦ ᐅᕙᓕᔭᖓᓂᑦ
as he remained awake on winter nights or as he prayed
ᑐᑲᓭᐊᑎᑦᓗᔪ ᐃᓂᖅᑲᖏᓪᓕᑐᒥ ᐃᓂᖅᑲᑎᖏᓭᑦ ᓭᓂᒃᑎᑦᓗᓭᑦ.
in isolated places while others rested.

Adomnán of Iona, seventy century

ᑕᐃᒪᐃᖏᓂᖅᓂᑦ ᑐᑭᓭᓭᒪᖅᓴᒃᑲᖏᓚᓐᓂᑦ ᔪᑎ ᐊᒻᒪ ᐱᑭᐊᖅᓂᖅ
We should not therefore understand God and creation
ᒪᖔᑕᓗᑭᒃ ᐊᐳᐅᕐᖏᓚᑦᑐᓗᑎᒃ, ᑭᓭᐊᓂᓕ ᐊᑕᐅᓭᐅᓗᑭᒃ ᐊᒻᒪ ᑕᖏᓇᓴᐃᖏᐅᓗᑭᒃ.
as two different things, but as one and the same. For creation
ᐱᑭᐊᖅᓂᐅᐸ ᐱᑕᖃᖅᒪᑦ ᔪᑎᑎ, ᐊᒻᒪ ᔪᑎ ᓴᖅᑭᑦᓴᖅᑐᓂ ᐱᑭᐊᖅᓂᖓᑎ.
subsists in God, and God is created in creation.

Eriugena, ninth century

In the dawn mist that encompasses Iona's nunnery ruin of *An Eaglais Dhubh*, the Black Church, there is a palpable feeling of presences. Around the cloister can be sensed the contemplative walk of Augustinian Sisters who inhabited this Scottish Isle from 1200 until about 1560, an interval half-way between the present industrial warming and Iona's legendary Christian beginning during the medieval warming. It was in 563 C.E. that Colum Cille began a voluntary exile from Ireland on Iona.[1] Through this action he came to influence Christian history as St. Columba, and now he influences this hermetic story as a legendary man who could calm the storms that afflicted this North Atlantic Isle. One story related by Adomnán of Iona tells of how his habit of praying on *Cnoc nan Aingel* inspired a rain-making ritual during a severe spring drought a century after his death.[2] The community elders walked "around the fields" with Colum Cille's tunic, after shaking the garment three times they read aloud from his books "at the Hill of Angels, where from time to time the citizens of heaven used to be seen coming down to converse with the saint".[3] That day, Adomnán writes, the clouds rose "from the sea, and heavy rain fell by day and night", resulting in a good harvest.[4] This legend intimates a saintly ancestral presence who mediated Iona's regionally unique ecological manifestation of the climatic hierarchy. From within *An Eaglais Dhubh*, these weather-making legends come together with the West's climatic uncertainty to guide my first step in a hermetic contemplation of human relations with the North Atlantic Ocean's circulatory changes. Before continuing with Iona's legendary guidance towards a climate of unknowing, it is first important that I introduce today's climatic thinking on an oceanic presence which surrounds this Isle's past, present and future.

For the past 11,000 years, the Atlantic's thermohaline circulation (THC) has given Iona and Scotland a relatively temperate climate in comparison to similar northern latitudes across the Atlantic in Canada. Cycling warm currents in a northeasterly direction from the Atlantic's equatorial region towards Western Europe, the THC moderates the temperature of these regions by acting like a conveyor belt that brings warm water, air and energy from the south. Central to the THC is the North Atlantic's cold salt water which, because of its higher density, sinks into the deep ocean as it follows North America's coast. This process that pumps the warm waters north towards Western Europe is today threatened by an industrial warming that is melting glaciers and increasing the amount of freshwater flowing into the ocean. Fresh water has higher buoyancy, and thus can decrease the THC's pumping activity that re-distributes energy towards Iona. These potential North Atlantic changes parallel past circulatory shifts that would have been relevant to life on Iona after the last Ice Age. Paleoclimate research has uncovered an abrupt cooling of Western Europe 12,600 years ago that lasted approximately 1,300 years in an event that bridged the Ice Age at the end of the Pleistocene and the current Holocene epoch. Known as the *Younger Dryas* cooling, research indicates that the steady warming at the tail end of the Pleistocene resulted in the melting of northern glaciers. This release of freshwater into the Atlantic impacted the THC and resulted in a series of decadal drops in temperature.[5] The *Younger Dryas* enveloped northern Europe and North America with winter temperatures about 10°C cooler than the present average,[6] snow for as long as nine months a year, Scandinavian and alpine glacial advances and about a millennia of more common extreme weather events.[7]

While this paleoclimate record suggests that today's warming may signal an abrupt cold future for Iona, computer models largely based on a relatively short and stable history project a gradual reorganization of the THC over the span of a century or two. The IPCC's TAR defined the shift of the THC as a limited probability, though it states that polar ice cores do indicate "that atmospheric regimes can change within a few years and that large-scale

hemispheric changes can evolve as fast as a few decades".[8] Though a shutdown of the THC is unlikely before 2100, the IPCC explains that the continuation of current GHG emissions could make it inevitable after that time, adding the caveat that "the analysis of extreme events in both observations and coupled models is underdeveloped".[9] In a critical analysis of General Circulation Models (GCMs) prevalent in IPCC reports, Demeritt states that modelers assume "that it is prudent to concentrate first on simulating what seem to be the likely outcomes".[10] He argues that this methodology is based upon "a subjective judgment about risk tolerance" which "may suppress the degree of system variability".[11] One consequence of these reductionary mathematical formulas that rely on researcher assumptions where uncertainties exist is that models tend to project continuous gradual change.[12] In contrast, Demeritt points out that paleoclimate research, like that which elucidates the *Younger Dryas*, challenges climate modelers to simulate "extreme climate states very different from the present-day averages".[13]

A 2003 Pentagon briefing paper responded to this critique by using paleoclimate research to inform a model which found that with today's climate changes the THC could begin to collapse as early as 2010.[14] The model indicated dramatic cooling and reductions in precipitation throughout much of the north, though it projects that over a period of a decade these effects "will be felt in fits and starts, as the traditional weather patterns re-emerge only to be disrupted again".[15] More recently, oceanography research indicates that the THC has already "slowed down by about 30 percent between 1957 and 2004".[16] A paleoclimate study found the oscillating movements of North and South Hemisphere glaciers to influence the Atlantic circulation,[17] and its lead author, David Sugden, speculates that current human actions which are melting glaciers in the north and south poles could impact climate in a way that sets off a "climatic seesaw effect... last triggered when the post Ice Age earth heated thousands of years ago".[18] Today's GHG rituals could manifest a sudden shift in Western Europe's temperature to that which has not been seen since the "drastic cooling of the Younger Dryas".[19] This interaction of the West's climatic uncertainty with polar glaciers and the Atlantic THC

calls forth Colum Cille and the weather-making legend of his Celtic Christian descendents to guide my first steps in hermetically contemplating the climatic hierarchy as it shifted from medieval warming to *Little Ice Age*.

Colum Cille's Sea-Road

The Celtic Christianity that Colum Cille brought to Iona began in Ireland with the man who would become canonized as St. Patrick. At the age of 16, Patrick was abducted by Irish Celts from the shores of Roman Britain and served as a slave for about six years.[20] The experience awakened a religious spirit that energized him to become educated as a Catholic priest after he escaped to a continental Europe that was no longer under the rule of the Roman Empire. As he followed this religious mission, Patrick became afflicted by dreams and images calling him back to the place of his earlier bondage. With his appointment to bishop in 432, Patrick was given the mission to convert Ireland to Christianity, becoming the first truly Western European missionary to preach in the unconverted lands that extended beyond the once powerful scope of the Roman Empire.[21] While there are legends of disagreements with Kings and confrontations with druids, there is little documentation which supports a sense of what Patrick did during his time on this Island that became home to his grave and legend.[22] What history does display is a flowering of Irish Celtic Christianity not long after Patrick's death, thus suggesting some significant influence. That said, the Christianity that evolved after Patrick's death was not the Roman Catholicism which was part of his early upbringing and which had supported his mission.[23] The distance of the Island from the continent gave Ireland space to create its own unique Celtic Christian practice based on the theological view that "people are born good", and sin enters the world through a "failure to love the neighbor".[24] The founder of this Celtic Christianity was not Patrick, but rather Colum Cille due to his formative influence in defining a distinctly Irish approach.[25]

This Irishman who gave form to the religious practice of Iona was initiated into both the traditions of Christianity and the Irish bards.[26] Unlike much of Western Europe which experienced a missionary effort that destroyed the previous druidic culture, McNeill explains that in Ireland these cultural traditions were not "destroyed by force".[27] Campbell similarly states that "in the remote, recently pagan Irish province there was not such a radical rejection by the monks either of the virtues of natural man or of the symbols of pagan iconography as was to be characteristic of the later missionizing of the German tribes".[28] Irish Celtic Christianity seems to have interacted with druids and bards in a way that, in its formative beginnings, valued their knowledge and understanding. Snyder goes so far as to suggest that the monks appear to have "assimilated the functions of the Druids, bards, and brehons".[29] Present knowledge of the pre-Christian bardic tradition comes from critical analyses of Classical Roman authors, archaeological finds and myths "compiled in vernacular Celtic languages".[30] Based on these sources, the bard is understood to have been the oral keeper of Celtic wisdom, memorizing thousands of lines and composing "new poems and songs to celebrate contemporary happenings".[31] Many of these stories reflect upon the close relation "between the sacred and the profane, the spiritual and the mundane, the supernatural and earthly worlds".[32] Spirits are seen to surround humanity in both a personified nature and the temporality of life, and as such spirits "presided over all human undertakings".[33] From within this animated environment, the bards sang of Gods, Goddesses, faeries and ancestral spirits that could traverse between the divine and earthly worlds.[34] Colum Cille valued this bardic knowledge, as represented in the verse of Dallán Forgaill which praises him for coming to the defense of bards during one of his return journeys from Iona.[35]

Using the curragh to sail across the channel to Iona was "a passage of great spiritual significance".[36] The passage's importance was related to Celtic beliefs which envisioned deities, fairies and ancestors dwelling "on distant islands", as well as within hills.[37] These were described as "thin-spaces" where the divine was experienced more acutely in the surrounding

nature. For many Celtic groups, clearings in forest groves, known as *nemetons*, were also thin spaces where "the human world could open onto the world of the gods and vice versa".[38] The Celtic legacy of these sacred exchanges can be traced in place names that include a derivative of *nemeton* scattered from "Galatia in Asia Minor right across Europe as far as Scotland".[39] As well as thin spaces, the Celtic bards talked of spirits that could become more immanent during thin-times, such as when death was close or when a celebration of seasonal shifts was enacted. In bardic legends the Otherworld of deities, fairies and ancestors "was thought to be either in the water, on an island, or else to lie beneath it".[40] For the Irish Celts on the edge of the North Atlantic this Otherworld could be engaged by pilgrimage beyond familiar shores into the watery unknown. In W. Y. Evans-Wentz' classic study of Celtic beliefs it is proposed that with the arrival of Christianity this Otherworld began morphing into "the Land of the Saints" which could only be reached by sea-voyage.[41] This Atlantic sea-road could take one to a place where the honored ancestors "live a mysterious life on the edge of real life", a world that nonetheless "remains fully mingled with ours".[42] Following this Irish tradition that "regarded the edge of water as a usual place for the revelation of wisdom", Colum Cille continued to foster a Celtic Christian wisdom concerning the ocean's relation to human lives.[43]

Colum Cille's Irish background brought to Iona this spiritual way of materially interacting with the world as part of a North Atlantic intercultural inheritance from the Neolithic and Bronze Age past. Even though the Celts only entered Western Europe around 700 B.C.E. and the British Isles a number of centuries later, this more ancient North Atlantic inheritance can be seen in their use of a curragh which is essentially "the same craft as the skin boat used by those prehistoric seafarers" of approximately 5000 years ago B.C.E., and that is still used today in northern parts of Ireland.[44] The ancient maritime tradition surrounding the curragh made possible "the sea-road of the saints" towards Iona, and the eventual settling of many more island hermitages along Scotland's coast.[45] With the passage of time these islands became increasingly central to Celtic life on the western edge of Europe. While not densely

populated or the center of political riches, this "significant part of the potent Celtic world" supported "balanced communities" which grew crops and plied their Christian trade while "fighting fiercely for their interests".[46] This cultural knowledge for living in this part of the Celtic world surely influenced Colum Cille as he arrived on Iona in the latter half of the sixth century. With this voluntary exile from his Irish homeland, Colum Cille would transform the Irish green martyrdom that followed St. Patrick's mission. Green martyrs, such as Brendan the Voyager, are described as Irish converts "who, leaving behind the comforts and pleasures of ordinary human society, retreated to the woods, or to a mountaintop, or to a lonely island".[47] Colum Cille re-directed this spiritual isolation in the North Atlantic wilderness towards a communal monasticism that was built upon a social contract of spiritual learning, art and community. Known as the white martyrdom due to its long tunic and hooded cloak made of undyed wool, these monks brought together Irish tribalism with the green martyr's hermit practice that was drawn from Eastern Christianity's desert fathers of Egypt and Syria.[48] Monks were connected to the community by the spiritual guidance of an abbot, with the ecological crucible for spiritual initiation transformed from that of the desert to the Atlantic Isles.[49] For Colum Cille, this meant regular pilgrimages from the Iona community to the more isolating Isle of Hinba for guidance.

What is known of Colum Cille's Hinba experiences and Iona community comes largely from Adomnán's book of legends, entitled the *Life of St. Columba* which was written in the seventh century. James Bruce's theological analysis of Adomnán's writings clarifies that this ninth abbot of Iona was significantly more influenced by Christian theology than the Irish pagan heritage.[50] While there is a century-long separation between his understandings and what happened to Colum Cille on Hinba and Iona, Meek makes the important point that Adomnán is "some thirteen hundred years closer to Columba" than our modern "range of conceptions".[51] This closer proximity leads Meek to describe Colum Cille as employing a "sharp-edged saintliness" that uses a "flesh-subduing austerity" in the elemental North Atlantic

for engaging the divine.[52] He describes it as a spiritual practice that is "in sharp contrast to the narcissism of contemporary popular philosophy".[53] Bringing this practice to Hinba, Adomnán writes that Colum Cille experienced a "heavenly light" that could be seen radiating from his shelter at night.[54] This "immeasurable brightness" that lights up the night symbolizes Adomnán's belief that "the saint shared in the eternal day of the heavenly life" because it was "divinely given to him".[55] In describing Colum Cille's enlightening experiences, Bruce proposes that Adomnán is revealing "the authority and the ability of God to intervene in earthly affairs".[56]

The most prevalent way in which Adomnán showed Colum Cille "as one around whom the supernatural world broke into this world, in whom God, by his Spirit, was present" was in his numerous divine dialogues.[57] Adomnán's legends describe a man who communed with ancient ancestors and angels while remaining "awake on winter nights or as he prayed in isolated places" like Hinba, Iona's *Sìthean Mor* or "great fairy mound" and *Cnoc nan Aingel*.[58] Analyzing the literary legends concerning Colum Cille, Joseph Nagy reveals this saint as being encouraged by divine messengers "to unearth the valuables of the dead, which have been hidden".[59] The bardic poets of oral memory and the words of Eastern Christian saints who he is transcribing are fundamentally important for Colum Cille's sea voyage to the Otherworld because "the 'dead', or those who should be dead but wondrously are not, tend to be the best informed and, in the right hands, the most obliging sources to tap".[60] These ancestors bring forth an ancient knowledge "that casts both the past and the present in a new light", while also facilitating a deeper dialogue with the angelic beings that radiate from the God.[61] Nagy concludes that Irish saints like Colum Cille are involved in interdependent dialogues with ancestors and angels that offer "divergent sources of information" which must both be tapped "to obtain the authorization for what *he* has to say, or even for him to be able to say it".[62]

What is interesting about the nineteen legends of angelic dialogues related by Adomnán is the fact that despite Colum Cille's many missions up the North Atlantic Isles and

into the Pict Celtic land that would become mainland Scotland, only one of these angelic communications is described as occurring beyond either Iona's or Hinba's shores. This one exception came during a "thin time", for "a vision of angels revealed to the saint that" a Pict chief known as Emchath was dying on the west coast of today's Loch Ness.[63] Within spiritual ecologies he knew well it seems that an Irish Christian cosmology of divine beings informed Colum Cille's contemplations and the practices of the white martyrs. Perhaps this Irish saint needed to be in thin places or times where his spiritual ancestors had a better ecological footing for mediating the more divinely powerful angelic dialogues.

Iona drew many Irish searchers for a spiritual understanding that came from Colum Cille's practice. When penitents arrived they received guidance, but Adomnán also makes it clear that they did not stay long for this Isle was not a place for penance and non-monastic living. As Márkus shows through one story, pilgrims only stayed on Iona "if they first received the habit and became monks".[64] The monks wore their white habits day and night, ate simply, slept on hard beds that were sometimes covered with sealskin during extreme weather and practiced a prayer life that blended reading and daily work. McNeill relates that all "manual tasks were conducted in an atmosphere of religion", including the "errands over the often turbulent waters to nearby islands", "fishing in the bays and on the sound", "cows to be tended and milked", "milk products to be processed" and the care of barley and oat fields.[65] The religious nature of these practical activities was also brought into rhythm with yearly religious and seasonal cycles that gave the community a spiritual sense of the North Atlantic's climatic metabolism.

Not simply secluding themselves to Iona, the white martyrs dispersed in various directions after Colum Cille's upper community limit of one hundred and fifty members was surpassed. At these times, "twelve and one monks would set off to establish another foundation".[66] By the time of his death, the white martyrdom had founded "sixty monastic communities" and many hermitage retreats in the Hebrides, Orkneys, Shetlands and beyond.[67]

Some historians suggest "that the annual migration of the wild geese to and from Iceland and the Arctic gave them confidence that there was land to find in the north".[68] In 825, a monk from Iona by the name of Dicuil wrote that in 795 monks sailed to the "furthest Thule", a large island that is today thought to be Iceland, and it was a journey for which "there had been earlier voyages to a summer hermitage".[69] He said that these monks arrived at Thule on February 1, "the first day of the old Celtic spring", and returned at the beginning of August when "the nights would have been just long enough to navigate the stars".[70] These pilgrims reported that during the summer solstice it was possible "to see clearly enough by natural light at midnight", "that the sea about Iceland is not frozen over in winter" and that the ocean's ice could "be found only a day's sail farther north".[71] On this sea-road, Iona was the strategic Isle from which the pilgrimage would begin as monks formed new communities or simply followed a hermit practice in the context of Iona's community. In both cases, Iona was the jumping off point into a surrounding spiritual cosmos that suffused life in these Atlantic waters.

These northern journeys up the sea-road were indebted to the Celtic ancestral knowledge for sailing the curragh, as well as the THC and other elementary processes that were integral to regional and global climate. Beginning in the mid-sixth century the climate which surrounded the Atlantic sea-road was significantly warmer than that which came after the white martyrdom's disappearance from these shores beginning in the ninth century.[72] At the northern edge of the Atlantic there was a general warming that started at around 300 and gradually spread southward to the British Isles and then the Western European continent in the great warming of 1000 to 1200 which at times approached "the level of the warmest millennia of post-glacial times".[73] These warming temperatures provided a beneficial climate for these sea-saints. Before continuing the story of the white martyrs and what they offer to my first hermetic step in contemplating the West's climatic uncertainty, a detour into other legendary

ocean presences that informed the saint's sea-road as the medieval warming progressed will further clarify this North Atlantic surround.

Oceanic Circulations

The post-glacial warming that began 16,000 years ago and led to the Atlantic THC reversal of the *Younger Dryas* was intimately connected to the Earth's three regular orbital cycles which provide a regular global pulse to the climate. These orbital cycles include a *precession* or wobbling that shifts the Earth's lean towards the Sun to two extremes every 11,000 years, taking a total of 22,000 years for a return to its initial position. With the *tilt*, the Earth cycles away from the Sun resulting in yearly seasonal changes and a "41,000-year orbital cycle" that causes "significant differences in solar radiation at latitudes poleward of 45°", such as Iona.[74] Finally, the *elipticity* of the Earth's movement around the Sun shifts over a period of 100,000 years, such that the Earth becomes five million kilometers closer to the Sun in one part of its orbital path than on the opposite side".[75] These three cycles interact to provide a regular climate pattern: every 41,000 years a change in tilt impacts "solar radiation at high latitudes", which is coupled with a "22,000-year cycle of precession" and an "eccentricity multiplier effect at 100,000 years".[76] The period beginning 16,000 years ago experienced a warming due to these orbital alignments, but these changes were not marked by a simple warming trend. Warming was interspersed with periods of extreme cold, like the *Younger Dryas*, that were related to shifts in the THC. These shifts in the climatic hierarchy also brought changes to the cultural development of Western Europe and the North Atlantic Isles.

While there is evidence of Palaeolithic settlements in England dating back to 40,000 B.C.E., evidence of hunter-gatherer activities in Scotland do not appear until around 10,000 B.C.E., just after the *Younger Dryas*.[77] As will be examined in a later chapter, another significant cooling period occurred a few thousand years after the *Younger Dryas*, which meant that it was not until 7,000 years ago that Western Europe's North Atlantic Isles would

experience a steady climatic improvement. With this change, more stable warming ecologies shifted northward as grasslands replaced shrubs and bushes, followed "by the spread of trees and the development of forest cover".[78] Settlements followed the expanding tree-line that reached its northern extremes by 3,000 B.C.E. on the coasts of the Hebrides, in Skara Brae of the Orkney Islands and some valleys of Thule.[79] The shelter and sustenance of these expanding forests contained fowl and red deer, while the Atlantic offered an abundance of fish and seals which could be accessed by the various Celtic groups who began arriving on Western Europe's Atlantic Isles at around 500 B.C.E. With the advent of farming, the seasonal hunts would be supplemented by agriculture and husbandry made possible by warmer temperatures. By 300 C.E., the medieval warming trend that further reduced the ice of the North Atlantic waters would a few centuries later also facilitate an intercultural dialogue between the Picts of present-day Scotland and Irish Christians like Colum Cille. In a few centuries these two cultures would define a new Scottish cultural identity, with the marriage being mediated by the social disruption of a third cultural traveler on the warming Atlantic sea-roads that would also become part of this evolving Scotland.

After the Irish sea-road voyages had populated the Scottish Isles and Thule with monasteries and retreats from the sixth to ninth centuries, the Norse of Scandinavian Europe arrived with a stormy impact on this Celtic story. From about 790, the Norse long-boats began to replace the curragh on the North Atlantic sea-road as these northerners voyaged to the coasts of Ireland, Scotland, Thule and beyond. These journeys owed much to cultural developments in the eighth century which saw their agrarian-fishing society become more involved in expanding European trade networks,[80] as well as the medieval warming which reduced sea ice though mitigated severe storms.[81] To maintain and expand this trade required "adventuresome leaders" who could sail "the known world and beyond it".[82] As with the Irish Celts and their curragh, the Norse were proficient sailors of their wooden longboats, "guided by the sun and the North Star and aided by a wealth of knowledge about such natural phenomena as currents

or bird and fish migrations, as well as by familiarity with the coastlines they sailed to and from".[83] Just prior to the ninth century a significant number of Scandinavians began ensuring their ambitions by, in Nuffield's words, "going Viking" and "raiding foreign shores to take what they wanted with purposeful force and violence".[84] In analyzing the post-Viking changes to the Isles from his Celtic Christian view, Dicuil states that "even as they had been always uninhabited since the beginning of the world, so now they have been deserted by anchorites because of Norse pirates".[85] The Vikings "were wreaking havoc in the Hebrides" by 794, a year that also witnessed the first looting of Iona.[86] The year 801 saw Iona's buildings burned, and the attack of 806 resulted in 68 monks being "put to the sword" at Martyr's Bay.[87] By 849, the steady attacks resulted in Colum Cille's relics being shared between Kells, Ireland and Dunkeld, Scotland, with the latter holdings being moved to Kells in 878 presumably also due to the Vikings.[88] It is around this time, according to Broun, that a Scottish identity forms out of "the instability and social dislocation which followed in the wake of the worst phase of Norse devastation inflicted on southern Pictland".[89]

Some of the Irish monks and hermits who "wanted no part of a life under these barbarians" chose a different cultural and geographical route, and thus began dispersing from the Isles.[90] Starting as early as 800, "those who were able, loaded their goods into the leather boats of the day and guided by their fishermen who knew the seas northwest of Ireland, sailed to Iceland".[91] Though Thule had been an island retreat, it would now temporarily serve as a settlement for a monastic community. This new peace in the far North Atlantic lasted only about seven decades for the white martyrs. Towards the end of the ninth century the Viking longboats of a leader called Ingolf found their way to Thule, leading Nuffield to speculate that if the white martyrs "were not killed by the Vikings, they quit the island just as they did Ireland, refusing to live with them".[92] Over the ensuing tenth century, this island that the Norse referred to as Iceland attracted increasing amounts of Scandinavian, and even Celtic, emigrants

looking for land away from the increasingly crowded populations of Western Europe. By the onset of the eleventh century, Iceland's population had grown to 75,000.[93]

Tied together with the Norse's ocean knowledge was a pagan religion that was dominant up until the millennium. Though their specific beliefs were diverse and localized, there were some common features that resonate with the pre-Christian beliefs of the Celts. Religious practices occurred at altars in forests or mountainsides which were the "sanctuaries for specific deities".[94] Each individual had specific ancestral guardian spirits "who hovered beside or near a person during life", while the larger group had access to the more honed spiritual powers of shamans or *noaides*.[95] These *noaides* helped people through rituals in places like sacred groves that employed helping spirits often in the form of birds, fish or the reindeer bull.[96] While Ireland provided an isolation for the Irish to manifest their own form of Christianity, the paganism of the continental Norse experienced a later Roman Catholic missionary effort that brought about "the deliberate destruction of such sacred sites".[97] In time, the individual guardian spirits became associated with angels and saints, while the Christian missionary was equated with the *noaides* liminal power. On the isolated Atlantic Isle of Iceland a Celtic Christian influence also appeared among the population in the form of "early churches dedicated to St. Columba of Iona".[98]

With the population of Iceland increasing in the late-tenth century, Erik the Red expanded the Norse adventures in search of land and prosperity beyond the known world to lands that would be called Greenland, Markland and Vínland. Since Greenland was the closest to Iceland, it became the site of the next settlements. In the opening decades of an eleventh century that followed the climax of the medieval warming, Leif Eiriksson re-traced Erik's voyage to Markland and Vínland.[99] There is much debate concerning where these lands are exactly located, with the proposals ranging anywhere from today's Labrador in the north to Newfoundland, Cape Breton, Nova Scotia and Rhode Island in the south. It is thought that Eiriksson's group landed and set up base in what is today L'Anse aux Meadows,

Newfoundland on Canada's east coast. They describe seeing rich pasture land, forests and rivers teeming with salmon. These images lead Nuffield to argue that the name Vínland was probably chosen to convey "the thought of abundant rich pasturage in a mild climate" to potential settlers.[100] The two summers when this group of Norse explored Vínland mark the early stages of Western European contact with North American cultures. During his voyages along the coasts, Eiriksson reports running into Skrælings who, according to current anthropological understandings, must have been the Montagnais of Labrador, Beothuk of Newfoundland or Mi'Kmaq of Nova Scotia. A few years later, in 1012 or 1013, another group of 160 Norse were led by a man named Thorfinn to Vínland with livestock.[101] This group set up base in what is probably Sandwich Bay, Labrador, and began a trading relationship with Dorset Eskimos that soon deteriorated into a fight that saw a number of Dorset killed.[102] Towards the second decade of the twelfth century, the bishop missionary of Greenland, Erik Gnupsson, is said to have made the first official Roman Catholic trip to this new land. While evidence suggests his stay lasted four years, little is known about this journey that calls forth the missionary spirit of St. Patrick entering Celtic lands beyond Roman Catholic influence. Interestingly, these Norse sagas offer even more obscure references which suggest that Gnupsson was not the first Christian authority to come to these lands.

In the Norse encounters with the Dorset, Thorfinn captured two young boys whom he took back to Iceland. After being baptized in the Christian faith and learning to speak the language, these boys told stories about a country "opposite their own land, where men walked about in white clothes and whooped loudly, and carried poles and went about with flags".[103] According to Nuffield, some historians suggest this statement, coupled with Leif's reference to their finding a wooden granary, point to the possibility of white martyrs arriving in Newfoundland and then moving down to Cape Breton, Nova Scotia beginning around 900. He proposes that these monks may have extended their escape from the Atlantic Viking circulations beyond Thule, eventually arriving in Vínland. This Celtic Christian possibility

leads Nuffield to further speculate that as with the Acadian settlers some seven centuries later, the hunter-gatherer Mi'Kmaq of Cape Breton may have been amenable to these white martyrs who simply wanted to continue their Celtic Christian agriculture and fishing ways in a land removed from the Norse cultural pressure. Their different cultural ways would have minimized competition for resources, and Nuffield even proposes that over time the "remnants of the colony, if there ever was one, may have been absorbed into the Micmac community".[104]

Sailing the curragh to Thule and Vínland was only one of Celtic Christian response to the Norse movements in the Atlantic. Some monks attempted to rebuild Iona, with the final two blows of the Norse coming in 825 and 986. In both attacks, all the remaining monks were killed, with the final slaughter including the abbot and the last fifteen monks.[105] Some shifted inland to Scotland, others returned to Ireland, and still others went southwest to present-day England and continental Europe. It is with this continental move that the influence of the white martyrs on Western hermeticism can be seen circulating in the medieval warming of Gaul's Carolingian Empire. Colum Cille's Celtic influence on my evolving hermetic practice for contemplating the West's climatic uncertainty will now begin to be clarified.

Pilgrimage to a Climate of Unknowing

While many of the early Irish monks followed their religious call to the Atlantic Isles, some also brought their understanding eastward to the continent, even prior to the Viking arrivals. In 590, Columban, not to be confused with St. Columba or Colum Cille, returned St. Patrick's missionary favor by setting off with twelve others on a peregrination to a continent struggling through the structural loss of the Roman Empire's collapse. Snyder explains that peregrination was a Celtic custom of making pilgrimages in such a way that the journey rather than the specific place was understood to be a way for engaging the divine wisdom of ancestors and angels.[106] On this pilgrimage through Gaul's forests Columban carried scholarly manuscripts that Irish Christians had acquired through trade and transcribed as part of their

religious practice, and which the continent had lost touch with after the fall of Rome.[107] Following Columban to many parts of Britain and continental Europe were groups of "unarmed white-robed monks with books in their satchels and psalms on their lips, seeking no wealth or comfort but only the opportunity to teach and to pray".[108] It is in the tradition of these Irish pilgrimages that increasing amounts of white martyrs followed after the Viking raids of the ninth and tenth centuries.[109] In Gaul, Emperor Charlemagne of the Carolingian Empire is said to have been very welcoming to the Irish monks and scholars, even creating "an Irish-style circle of scholarship".[110] Dicuil was part of this Irish circle in Gaul, with Marsden describing it as a "sad irony" that his writings about Iona and Thule were created from "the sanctuary of the Frankish court, where he was one of the many Irish monks who had fled to the continent", probably after the 806 sack of Iona.[111] In 845 the last of "the great Irish scholars who ate at the tables of kings" came to Charles the Bald's court during the twilight of this empire.[112] This man was John Scottus Eriugena, and it is with his writings that a clearer sense of Colum Cille's Atlantic sea-road to ancestral and angelic dialogues can be contemplated.

Beyond Eriugena's written philosophy, little is known of this man who was born around 810 and whose name means native of Ireland, possibly locating his home in Erin.[113] Learned in the Celtic Christian thought that finds its ancestral roots in monks like Colum Cille, Adomnán and Dicuil, it is thought that Eriugena brought this knowledge to Gaul due to the Viking attacks.[114] He was most likely educated in the Celtic Christian scholarship that "reached its heyday in the seventh and eighth centuries", and which "was still important in the monastic centers of the ninth and later centuries".[115] This education gave him a deep understanding of Eastern Christian desert mysticism and traditional Celtic thought, resulting in a hybrid philosophy that resisted any distinction between natural and supernatural.[116] As Eriugena proclaims: "Nature is the Cause and Creator of all things, is wise, and is alive".[117] Before continuing with Eriugena's view of the world, it is helpful to begin by exploring his spiritual methodology.

While Eriugena affirms a practice that views knowledge of the creation as a reflection of divinity, he also guides a *via negativa* that recognizes a power which surpasses all created forms and human knowledge. Referring to these respective *kataphatic* and *apophatic* approaches of the divine, he explains that "these two ostensible opposites are not at all opposed to each other, but harmonious in all respects":

> The *apophatic* knows how to strip Divinity of all the designations with which the *kataphatic* clothes it. One clothes it by saying, for example, "It is Wisdom." The other strips it by saying "It is not Wisdom." One says, then, "It can be called this," but it does not say "It properly is this." The other says, "It is not this, although It can be given a name derived from this".[118]

Talking about this exact passage, the Eriugena scholar Willemien Otten finds him to be teaching a practice which begins by metaphorically affirming all that which can be known as the divine, followed by a *via negativa* that realizes all metaphors concerning the One cannot approximate its ultimately "inexpressible nature".[119] Though Eriugena describes *natura* as part of an intricate divine hierarchy, to be discussed in more detail later, he also realizes the importance of recognizing the unknowable source of *natura* and the human mind. This reality makes it necessary to negate "every fixed idea and every static order" so that the "human mind can learn to cast aside its own limitations and enter into infinite darkness".[120] As Carrabine summarizes, the basis of his contemplative practice is a divine nature that "surpasses every intellect and all sensible and intelligible meanings", and "is better known by not knowing".[121]

This dark dimension of Eriugena's practice drew inspiration from an Eastern Christian and Greek fluency that surpassed many during this medieval age, and which served him well in a Carolingian court that "was enamored with things Byzantine".[122] As a gift for Charles the Bald, he translated the Greek writings of Dionysius which, according to Carrabine, would have been well-received since Dionysius or St. Denis "was understood to be the patron saint of Paris".[123] Legend has it that Eriugena's manuscript "was received on the feast of St. Denis",

with miraculous cures being reported at the saint's abbey "outside Paris".[124] During the medieval period St. Denis was mistakenly identified as Dionysius the Areopagite, an influential councilor from Athens who helped St. Paul in his Christian teachings - a legendary issue of identity that we will continually come back to in this act's subsequent stories.[125] Evelyn Underhill explains that with Eriugena's translation, Dionysius' writings began nourishing "the most spiritual intuitions... and possessed an authority" in Western Europe up until the seventeenth century that "is now hard to realize".[126] In her classic analysis of Christian mysticism, Underhill characterizes this translation as marking "the beginning of a full tradition of mysticism in Western Europe" due to it being "the first, and for a long time the only" accurate description of "the workings of the mystical consciousness, and the nature of its ecstatic attainment of God".[127] In reading Dionysius, Underhill states the mystics of medieval Europe "found their most sublime experiences reflected and partly explained".[128] To contemplate Eriugena's practice it is necessary to consider Dionysius' writings which became influential to Christianity and hermeticism.

Addressing his teachings as guidance to Timothy, another disciple who joined St. Paul, Dionysius is primarily concerned with a *via negativa* for transforming human understanding of divinity. In Dionysius' words:

> What has actually to be said about the Cause of everything is this. Since it is the Cause of all beings, we should posit and ascribe to it all the affirmations we make in regard to beings, and, more appropriately, we should negate all these affirmations, since it surpasses all being. Now we should not conclude that the negations are simply the opposites of the affirmations, but rather that the cause of all is considerably prior to this. [129]

His *via negativa* recognizes the value of knowledge, but, as with Eriugena, teaches that anything which is known needs to be inspired by that which is beyond knowledge:

> It might be more accurate to say that we cannot know God in his nature, since this is unknowable and is beyond the reach of mind or of reason. But we know him from the arrangement of everything, because everything is, in a sense, projected out from him, and this order possesses certain images and semblances of his divine paradigms... God is therefore known in all things and as distinct from all things.[130]

Based on an analysis of Dionysius' influence on St. Thomas Aquinas, O'Rourke writes that in seeking the "vestiges of divine presence in the universe of creatures" his philosophy offers "a longer way to divine truth" through that which is "knowable in creatures".[131] Blending knowledge with contemplation, Dionysius offers a practice that forgets all that is known of the beings in this world, not because they embody some defect, but rather due to *natura's* participation in a divine power that is beyond sensibility, knowledge and symbolism.

This Greek mysticism offered Eriugena a practice for attending a divine power that, as in the Neoplatonic tradition, emanated into the creation. Gersh explains that Dionysius' "doctrine is the first Christian version of a type of Neoplatonic philosophy"[132] that is heavily influenced by emanation metaphors "of higher realities giving off an effulgence towards the lower" which can be sensed through "vision, hearing, smell, and touch".[133] He displays this Neoplatonic sensibility in his suggestion that "sensible smells are images of the intelligible transmission" which diffuse "God's potency from one level of the celestial hierarchy to another".[134] This emanating celestial hierarchy takes the form of three groups of angels that reverberate from the One that is beyond creaturely knowledge. Closest to the One are the thrones, cherubim and seraphim, which are described as having "many eyes and many wings" that allow them to receive "more directly the first enlightenments from the Deity".[135] In the second group are authorities, dominions and powers associated with the evolving history of places, cultural groups and nations. Finally, the lowest group consists of angels, archangels and principalities that are more actively involved in the guiding of individual lives. Dionysius explains that "the sacred power of the highest beings lifts up the subordinate members of the

angelic hierarchy towards the divine".[136] The French philosopher Michel Serres points out that in ancient and medieval traditions, angels often passed "by in a breeze or a ruffling of water, or in the heat and light of sun and stars - in short, in any elementary fluxes that make up our Earth".[137] This is a teaching that was central to Dionysius' celestial hierarchy, especially when talking about the highest angelic order:

> They are also named "winds" as a sign of the virtually instant speed with which they operate everywhere, their coming and going from above to below and again from below to above as they raise up their subordinates to the highest peak and as they prevail upon their own superiors to proceed down into fellowship with and concern for those beneath them.[138]

As wind, breath and light, angels reveal their message in both "what they produce" and in "what they are".[139]

While there is no indication that Adomnán or Colum Cille were influenced by Dionysius' hierarchical view of angels,[140] it is clear that Eriugena was enamored with the view. This is apparent in his statement that "Whatever in the universe is accomplished by the lower orders of celestial beings is referred to the higher, since the lower do only what the higher instruct them to do".[141] These elementary angelic emanations, which in the Celtic Christian tradition could be mediated for the pilgrims by ancestral saints, suggest a certain immanence of God. This Christianized Otherworld is "understood not as a hierarchy of self-determining and therefore internally multiplicative principles but as the theophany of a single self-determining God who is multiplied through his own act of creation".[142] Eriugena displays this immanent view of the divine beautifully:

> We should not therefore understand God and creation as two different things, but as one and the same. For creation subsists in God, and God is created in creation in a remarkable and ineffable way, manifesting Himself and, though invisible, making

Himself visible, and though incomprehensible, making himself comprehensible…

though lacking form and species, endowing himself with form and species.[143]

God's suffusion of the creation through a celestial hierarchy makes it impossible to completely understand the world, and as such Eriugena offers a *via negativa* for contemplating the ancestrally-mediated knowledge that comes from these angelic emanations.

Eriugena's writings bring forth a unique Celtic re-visioning of Dionysius' Neoplatonic cosmology that expands our sense of the celestial hierarchy which once dialogued with Colum Cille. For Eriugena, *natura* is the term for that which can be known of "the entities of God and creation", while theophany refers to the way in which the unknowable source of the emanations compromises "itself to be grasped by human understanding".[144] In other words, knowledge of *natura* is a reflection of the divine's willingness to cyclically emanate a theophany towards human thought, though in such a way that understanding of the divine can never be complete. The *via negativa* is, in Eriugena's view, a practice for engaging the unknowable source of this theophany that "is not wholly visible to any creature, but is seen and will be seen in the clouds of speculation".[145] This image of a "cloud" in relation to the *via negativa* provides a good starting point for clarifying Eriugena's unique understanding of theophany, for this atmospheric image is also prevalent in the writings of a later English translator of Dionysius' works that offers a slight contrast to Eriugena's Celtic Christian approach.

In the fourteenth century, the first English translation of Dionysius' *Mystical Theology* appeared, and it so resonated with the people of this time and place that one writer said that the work "ran across England at deere rates".[146] This anonymous translator, already briefly met in the introductory chapter, also authored *The Cloud of Unknowing*. While his identity is unknown, it is widely thought that he was a learned hermit monk of the Carthusian habit.[147] His book teaches a practice of forgetting or *via negativa* that "is not merely a way of prayer, a manner of devotion", but rather "is a way of life" that "implies a peculiar sense of

responsibility, a special gift of humility, an unusual common sense".[148] Using the natural phenomenon of a cloud as a metaphor for that which separates human knowledge from the divine source, he clarifies his meaning by stating "it is not called a cloud in the air but a cloud of unknowing that is between you and your God".[149] Clouds are metaphors for that which obscures a divine reality, thus calling forth Dionysius' *via negativa* for distinguishing between the limited knowledge of *natura* and the wisdom for attending the celestial hierarchy which surpasses this knowledge.[150] While the English hermit teaches a "perfect mindfulness"[151] and Dionysius describes an almost cognitive *via negativa* for becoming unified with the One's darkness,[152] Eriugena offers a different emphasis that is probably closer to the legendary spirit of Colum Cille's ancestrally-mediated angelic dialogues on Iona and Hinba.

Whereas Dionysius "saw all names of God as defective means of invoking" that which cannot be known, Otten explains that Eriugena styled "a new usage of language in which the predication of God is after all immediately possible".[153] His Celtic Christian dialectic between *kataphatic* and *apophatic* practices placed one in "an intermediate position between *theophania* (which reflects the divine tendency to lock itself away from the mind's grasp) and *natura* (which is based upon the open principle of rationality)".[154] The language of that which is known and sensed can, according to Eriugena, be "transferred from creatures to Creator by a kind of divine metaphor" that derives from the willingness of the One to be known in a theophany that can be attended through this ancestrally inspired dialectic practice.[155] Contrasting Dionysius' over-reliance on the *via negativa*, the metaphoric understanding of the "theophany allows everything within the scope of *natura* to function as a legitimate and accurate representation of the divine".[156] Rather than taking both Dionysius' and the English hermit's more common mystic route of seeking "an alternative path to the unknowable through mystical union", Eriugena offers a path to the One "that is filled with signs and symbols of the presence of the unmanifest God made manifest" in a theophany that approaches knowledge when humans simultaneously engage *natura*.[157]

Following Evans-Wentz' proposal that the Neoplatonic celestial hierarchy resonates with Celtic bard legends of the Otherworld,[158] it can be suggested that Eriugena's theophany represents a non-material hierarchy of elementary angels and saintly ancestors which suffuses *natura* with the One when this dialectic is practiced. For Eriugena, "the outstretched universe became the very instrument by which knowledge of the divine was communicated to created nature", with human knowledge of the creation and divinity being dependent upon the willingness of the theophany to be approached.[159] His dialectic practice may be intimately connected to white martyr pilgrimages, with ancient Celtic natural knowledge and Eastern Christian practice informing Otherworldly dialogues on the *via negativa* of isolated hills, islands and Atlantic sea-roads. It is a practice that may very well be revelatory of Adomnán's opening description of a weather-making ritual, for through the use of Colum Cille's relics in his preferred thin-place this saint would be called on to mediate a dialogue with the theophany for the Iona community. By following Eriugena's guidance, I can contemplate the climatic hierarchy as *natura* and *theophany*, a climatic theophany of ecological processes that derive from the One's angelic emanations and which can be more fully engaged through the help of saintly ancestors. This Celtic dialectic practice which is central to hermeticism extends my first act's contextualizing of disciplinary knowledge within climatic thinking by bringing my interdisciplinary analyses of the West's uncertainty into a *via negativa* that can engage the climatic theophany's emanating changes. I define this hermetic dialectic that intertwines interdisciplinary knowledge and ancestrally-inspired contemplations as the *climate of unknowing*.

North Atlantic Wisdom

As the medieval warming began to taper off, Eriugena's teachings would be falsely accused of being pantheistic because of their integration of *natura* and *theophany*. In the thirteenth century Pope Honorius III banned his writings, excluding the translation of

Dionysius. This Roman Catholic action was merely the latest in a series that successively marginalized the legacy of Celtic Christianity. Starting in 663 at the Synod of Whitby, almost a century and a half prior to the impact of the Norse, the Roman Catholic institution first brought their pressure to bear on the white martyrs. In its most distilled characterization, the conflict "was nothing less than the struggle of the Church of Rome on the one hand to establish unity and supremacy which alone would safeguard the survival of Catholic Christianity in the West; the struggle of the Celtic Church, on the other hand, to maintain its spiritual independence and right to adhere to its own ancient and honourable traditional usages".[160] While Celtic Christians gave Rome a qualified authority, its practices were largely based upon an individual initiative that did not necessitate consultation with the Pope.[161] The Roman Catholics who inherited "the organizing genius" of the earlier empire won the day.[162] For the Celtic Christians who, as Finlay states, "were not builders, who were not tempted to follow a tradition of containing their gods in temples but felt closer to them where they could feel the wind buffeting their faces, and see the flash of white wings against the sky, and smell the sun-warmed bark of trees", Iona would still offer a brief respite from the universalizing pressure after the Synod.[163] The next blow to Iona's Celtic way which recognized "that tumbling waves and soaring clouds stimulate communion with God"[164] came via the Vikings. With Colum Cille's white martyrdom re-situated in Kells after the late-tenth century Viking attacks, Iona would lay vacant of religious habitation until the twelfth century when a Benedictine monastery was founded. The centuries that followed the Synod saw the Benedictine religious habit of Roman Catholicism grow in dominance throughout Western Europe. As was common in the Middle Ages, Iona's monastery was partnered with Sisters of Celt and Norse ancestry from Ireland and the west highlands of Scotland in the Augustine nunnery of *An Eaglais Dhubh*.[165] At the same time as these twelfth and thirteenth century religious developments on Iona, the writings of Eriugena and Dionysius underwent a revival in Gaul that is the focus of this act's next chapter on Western Europe's evolving hermeticism.

Before following this Celtic Christian peregrination towards Gaul's ancestrally-inspired climate of unknowing as the medieval warming gave way to *Little Ice Age*, I briefly return to a North Atlantic contemplation of the climatic theophany's cooling circulatory changes to Norse settlements as foreboding signs that have contemporary methodological importance.

The climate histories of Lamb, Fagan and Ruddiman describe the moment when the medieval warming shifted toward the *Little Ice Age* as uncertain regarding specific dates, though periods of change began to be felt as early as the fourteenth century.[166] Rather than a "deep freeze", Fagan describes the climatic deterioration as an "irregular seesaw of rapid climatic shifts" that "brought cycles of intensely cold winters and easterly winds, then switched abruptly to years of heavy spring and early summer rains, mild winters, and frequent Atlantic summer storms, or to periods of droughts, light northeasterilies, and summer heat waves that baked growing corn fields under a shimmering haze".[167] According to Ruddiman, if the average temperature of the twelfth century is used as a baseline, then it "had cooled 0.1°C to 0.2°C by 1600 to 1900, and a few extreme decades showed changes as large as 0.4°C".[168] Some research speculates that this cooling which lasted until the middle of the nineteenth century "may have been caused by a significant slowing of the ocean conveyor",[169] though paleoclimate research suggests that other factors like reduced solar output may have been involved. While the cause may be uncertain, there was a clear result: "severe winters, sudden climatic shifts, and profound agricultural, economic, and political impacts to Europe".[170] Europe's subsistence economies of the early-fourteenth century experienced the destruction of crops, the loss of less fertile land and famines.[171] For Scotland's Isles, the cooling had a steady impact. By the mid-sixteenth century the growing season had reduced "by as much as five to six weeks",[172] and this was coupled with severe Atlantic storms.[173] While Barber suggests that this cooling "may go some way to explaining the social unrest in these areas during this period",[174] Wolfgang Behringer states the changes "left European society on the brink of the apocalypse".[175] This was especially the case in the northern islands of Iceland and Greenland

where new intercultural relations and adaptations began to be fostered by the climatic theophany's cooling emanations.

Early in the thirteenth century, ice began to surround these northern islands, such that "by 1342 the ice was so much increased that the old sailing route from Iceland to Greenland at the 65th parallel of latitude had to be abandoned for one further south".[176] In 1395 the Venetian trader Nicolo Zeno with the help of Sir Henry St. Clair, the Scottish Earl of what was then Norway's Orkney and Shetland Islands, journeyed to Vínland and Greenland where he spent some time at a monastery.[177] His writings reveal that "by that time the monks had absorbed some of the Eskimo culture".[178] Zeno describes an Inuit kayak at great length, but what is interesting is "that these kayaks were not being used by Eskimos but by the fishermen from the monastery".[179] There is an evident "fraternization between the Norsemen and the Eskimos", with Zeno reporting that the monks realized the value of the Eskimo kayak and other techniques such as their "round domed stone houses" which mimic "snow igloos, complete with vent".[180] It seems as though the *Little Ice Age* was facilitating cultural exchanges for adapting to these northern lands, though with the cooling temperatures of the fifteenth and sixteenth centuries an understanding of these evolving relations receded from Western Europe's textual memory. The climatic deterioration gradually forced some Europeans to abandon their settlements on Greenland.[181] For those who stayed communication with Europe would eventually be completely lost, with some historians speculating that the settlements were destroyed by a combination of conflict with Inuit, disease and droughts that plagued a people who insisted on agriculture despite the cooling.[182]

By the late-seventeenth century, "the great southward spread of the polar water and ice" resulted in what appears to be an inadvertent new cultural arrival to the northern Scotland sea-roads. As Fagan explains, between 1695 and 1728 there were several occasions when "inhabitants of the Orkney Islands off northern Scotland were startled to see an Inuit in his kayak paddling off their coasts", with one kayak coming "as far south as the River Don near

Aberdeen".[183] This latest North Atlantic legend, which bookends Colum Cille's earlier sea-road journey, reveals an important common thread that passes throughout this story: oceanic changes in the climatic theophany have circulated intercultural contacts between Celtic Christians, Norse and Inuit. Such an Atlantic mediated cultural circulation is occurring again today as the West and Inuit attempt to understand and respond to the climatic uncertainty of industrial warming. The THC reveals significant ecological interactions between the Inuit lands of Canada's Arctic and Western Europe, such that the climatic theophany may emanate warmth to one area and cold ocean currents to the other. The ACIA explains that with "local warming in Greenland" projected to "exceed 3°C during this century" the THC's "northward oceanic transport of tropical warmth that now moderates European winters could be significantly diminished" due to the influence of melting glaciers.[184] In contrast to the projected global warming, much of Western Europe would experience a cooling trend. These potential oceanic changes to the climatic theophany lead my climate of unknowing into dialogues with Inuit as part of a lengthy North Atlantic intercultural legacy. Your next step towards either an IQ or Gaul hermetic view on the West's climatic uncertainty depends on the introductory way you chose to enter these polyphonic acts.

10 Notre Dame de Gaia's Apocalyptic Translatio (1100 – 1700 C.E.)

ᓄᑐ ᑕᐃᒪ ᑎ ᒐᐃᖅᐅᐸ ᓯᓚᐃᓪᓗᐊᓂᖅ ᑐᑭᓗᐅᖅᑕᖏᒐ

ᓇᓵᖅᑐᓄᑦ ᐃᓕᓴᓂᐊᖅᑎᑕᐅᓂᐊᖅᓯᑎᑦ ᐊᒥᓯᓂᖅᓴᓂᒃ ᐅᖅᓕᒪᒐᓂᑦ.
The forests will teach you more than books.
ᑕᒪᒃᑯᐊ ᓇᓵᖅᑐᑦ ᐊᒪᒪ ᐅᓴᖅᒃᑲᑦ ᐃᓕᓴᓂᐊᖅᑎᑎᔪᓴᓇᒪᑕ
The trees and rocks will teach things
ᓯᓇᑐᐃᓴᓇᓂᒃ ᖃᐅᔨᒪᔪᖅᔪᐊᑦ ᓯᓇᑐᐃᓴᓇᓂᒃ ᖃᐅᔨᓴᓂᖅᒥᒃ
that the masters of science will never
ᐃᓕᓴᓂᐊᖅᑎᑎᑎᔪᑎᒥᓕᐅᖅᓯᒪᔨᓴᓴᓇᖅᓯᓴᓂᓴᓂᒃ ᐃᓕᓴᓄᑦ.
teach you.

St. Bernard, twelfth century

ᐃᓯᖏᓴᓇᖅᓯᑦᑐᖅ ᐱᔭᔪᑎᑎᒥᔾᔨᖅ ᐱᑕᖏᐅᓴᓇᓴᓇᖅᓯᓕᖅ ᐃᒪᒥᓂᒃ
Eternal reason cannot exist without
ᐱᔪᒥᒃ ᓯᓕᑐᓂᖅᑕᖏᖅᑎᓴᓇᒧ ᐊᓴᒧᑎᑎᐅᑦ ᖃᐅᔨᔭᕆᐊᖏᖅᓂᓯᓴᒪᓄᑦ
natural wisdom because man must find
ᐃᓯᖏᓴᓇᖅᓯᑦᑐᖅ ᐊᑦᑐᐃᑦᑐᒥ.
the eternal in the natural.

Paracelsus, sixteenth century

ᓯᓇᓕᒪᑦ ᐱᔪᑦ ᐊᓂᖅᓂᒥᑦ
Everything that comes of the spirit
ᑐᓵᖅᑕᐅᔭᕆᐊᖏᖅᓪᓚᑕ.
must be awakened.

Rudolf Otto 1923

Eriugena's peregrination into the center of Gaul guides this contemplation forward a few centuries to an evolving twelfth century Neoplatonic hermetic vision which M. D. Chenu proposes is best evoked by the cathedral then "being built at the shrine of Chartres in a burst of creative zeal".[1] Notre Dame de Chartres' dedication to the Mother Mary etymologically connects this cathedral with the Latin *mare* or sea, and symbolically with an ancient lineage of goddesses that are "the primordial womb of life from which all created forms emerge".[2] Resonating with the North Atlantic waters which surround Iona and the sea-roads, Notre Dame's watery womb is, in Eliade's words, "the earthly reproduction of a transcendent model" that "continually resanctifies the world, because it at once represents and contains it".[3] Contrasting the computer-generated General Circulation Models (GCMs) that climate researchers objectively look upon, entering this transcendent model resonates with the nature of Gaia's indeterminism. At Chartres, the language of this model is based upon a Neoplatonic symbolism that Chenu states does not merely supplement "a previous act of reason", but rather gives "primary expression to a reality which reason could not attain and which reason, even afterwards, could not conceptualize".[4] As with the *via negativa* of Dionysius and Eriugena, this twelfth century symbolism elevates images "borrowed from sense-perceptible reality", or objective GCMs, to the divine through a climatic unknowing of their "native material content".[5] Chenu describes this symbolic process as a *translatio* which delivers "a fair representation of the mystery" by ensuring that the cathedral's metaphors are "obedient to the necessities imposed by transcendent realities".[6] This hermetic story elucidates the *translatio* through my entry into Notre Dame de Chartres as a transcendent model of Gaia's

indeterminism where I can contemplate the climatic theophany's changing emanations as the medieval warming gave way to the apocalyptic cooling of the *Little Ice Age*.

Notre Dame de Chartres and all the great gothic cathedrals of Western Europe indirectly derived their original inspiration from the thought of Dionysius or St. Denis. In his historical analysis of this gothic enterprise, Robert Scott explains that the original model for the cathedrals was envisioned by Abbot Suger in his early-twelfth century renovations of the Abbey Church of St. Denis found seven miles north of Paris.[7] This church that originated in the late-fifth century was "built to house the relics of a martyred third century saint, variously referred to as Denis, Denys, and Dionysius".[8] Though this saint is today identified as a distinct missionary bishop who was martyred in this region of Gaul during the reign of the Roman Emperor Decius, the Church of St. Denis also became symbolically associated during the Byzantine-inspired Carolingian Empire with the Greek Dionysius translated by Eriugena. By the time of Abbot Suger the popularity of Eriugena's translation led him to begin a project of making the church into a symbolic monument that applied Dionysius' mystic theology. Central to this transcendent model was Dionysius' description of the One as the "initial, uncreated, creative light" which emanates through "every living creature, every natural object".[9] Representing this light in the church required technological feats of increasing the structure's height, expanding windows that employ the developing art of stained glass and reducing obstruction within the sacred space so that the radiating "light can mediate between what is bodiless and what is corporeal".[10] While Suger's church was no cathedral, his work in applied theology "stimulated renovation to the new Gothic style of a large number of Romanesque cathedrals in the surrounding Greater Paris Basin".[11] Employing Dionysius theology of the One and the many, cathedrals like Notre Dame de Chartres became, in the words of Scott, "akin to a great lens created to gather the diffuse ambient light of the divine spirit and focus it to a particular geographical location where it becomes available for human worship".[12]

Approaching the spiritual lens that is Notre Dame de Chartres, one is instantly awed into stillness by the many stone-carved ancestors and angels that witness each of its three portals. To the northwest is the North Portal's representation of the elders who prepare the way for Christ and his crucifixion. Following the nightly Sun path around the cathedral leads to the portal-less northeast side which shelters the dark passage of the crucifixion before the rising Sun heralds the South Portal. Around this southeast entrance is symbolized Christ's triumphant resurrection with all the saints, including St. Dionysius, who followed in his footsteps as a presaging of the world's eventual apocalyptic renewal. Finally, to the southwest is the Royal Portal where pilgrims enter into Notre Dame so as to be spiritually re-born. This Royal Portal has three doorways surrounded by carved images which depict a mix of secular, philosophical and divine relations. Witnessing the pilgrim's entrance are the round of monthly works, the zodiac's signs, Christ's ascension, the apocalypse, seven liberal arts accompanied by representatives like Aristotle and Pythagoras, and the Mother Mary with child. Portrayed with a celestial hierarchy of guiding angels and ancestors, this portal's symbolic proliferation blends Biblical history, Celtic hangovers, scholarly knowledge, ways of living and natural symbolism that is "disparate in their points of origin, their objects, and their operation and structure".[13] While this abundance of metaphors "seems bewildering" to the modern mind, Chenu explains that Chartres' cosmology and related "ceremonial activities" made perfect sense to people in the twelfth century because it interconnected nature symbolism of everyday living with a learned sacred history that "remained irreducible to one another even when knotted together in a Christian structure".[14] As such, Chartres offers diverse symbolic portals of entry into contemplating the One's emanations through a *Nature* that is capitalized to personify a goddess who is in divine communion.[15] As the twelfth century Eriugena-influenced Alan of Lille had Nature state: "His working is one, whereas mine is many".[16]

Entering Dionysius' transcendentally-aware cathedral model requires an intimate engagement with scholarship, everyday living knowledge and religious symbolism.[17] During

its ascendancy, Notre Dame de Chartres was a cathedral school that pre-dated France's universities. Here students learned the seven liberal arts of the lower *trivium* - grammar, rhetoric and dialectic - and the higher *quadrivium* - music, arithmetic, geometry and astronomy - as necessary knowledge for crowning a theological understanding of life. In the words of Chenu, "nature belongs to secular science", and since nature is also sacred "science and mysticism ought naturally to complement one another".[18] The French historian Jean Markale adds that everyday working knowledge was also inspired by this sacred womb, for on the Royal Portal's "left tympanum the signs of the zodiac alternate with peasant occupations" to re-infuse "knowledge with ordinary life".[19] It was a common medieval practice to depict "calendar months in terms of seasonal outdoor activities", with September being the month of cutting corn and feeding acorns to swine, February the period for pruning, March symbolized by ploughing and May as the time for tending sheep.[20] Of particular symbolic interest to all these knowledges was the way in which the One emanated through Nature in "regular and determinate sequences".[21] Seasonal shifts and celestial motions were seen as Nature's closest representations of the One's unknowable will in people's everyday lives, and thus Chartres symbolizes this emanating reality in the zodiac, monthly works and in the structure of the cathedral itself. By stepping through the Royal Portal it is possible to engage what I call the climate of unknowing by symbolically contemplating the climatic theophany's emanations as they manifest in Nature or Gaia's indeterminate cyclical patterns.

This hermetic act guides me to carry within this transcendent model of Gaia the sacred history of Chartres and a climatic thinking of the regular CO_2 levels that are deeply intertwined with the medieval period's orbital cycles, Atlantic Ocean circulations and northern weather patterns. Over the past 400,000 years the highest CO_2 levels are recorded during the warmest period of interaction every 100,000 years, and its lowest levels during the regular Ice Ages.[22] These cycling patterns are important to my hermetic act of entering Notre Dame de Chartres as an indeterminate model of Gaia because of the way in which the West's climatic uncertainty

has today disturbed the regular CO_2 cycles, thus threatening to manifest apocalyptic natural and cultural changes in the Arctic, North America and Western Europe. Within Notre Dame I contemplate the human participation in these gaseous changes of the climatic theophany through the *translatio* of two symbols that enlighten a human influence on France's cycling from medieval warming to *Little Ice Age*, which thus historically contextualizes the cultural influence of the West's industrial warming.

The Blue Virgin's Warmth

Upon entering Notre Dame de Chartres' sacred womb, one becomes bathed in a light blue radiance that emanates from the surrounding abundance of sacred stories told in the luminescent splendor of stained glass windows. One of the most magnificent and oldest of these sacred light bearers is set high in the southeast wall. Dating from the mid-twelfth century, this window that offers the dawning Sun's radiance is known as *Notre Dame de la Belle Verrière*, or the Blue Virgin. Her shades of blue and white garments flow like Gaia's waters and air within a surround of magnificent red that resonates with each morning's rising Sun. Upon her lap sits the Christ child dressed in brown garments and a green halo, while on either side is a celestial hierarchy of three angelic orders. These angels ring bells, wave incense, hold candles and bring food. Obviously inspired by Dionysius' celestial hierarchy where "the greater intensity of the superior being exerts an attractive force upon the one next below it and draws it upward toward its own higher level",[23] this window reveals an intricate cosmology of Nature and theophany in the transcendent light of the One. The twelfth century mystic theology of Hildegard of Bingen clarifies that in this Neoplatonic Christian cosmology the One "is honored first, then the Virgin Mary, highest of created beings", after which comes "the angels and the various ranks of saints".[24] As with Notre Dame de Chartres, the Blue Virgin's symbolic elements also resonate with earlier Celtic depictions of "ancient mother goddesses".[25] The white dove which descends towards Her head is more ancient than a

Christian epiphany of the Holy Spirit, for the symbolic conjunction "would have been understood as the Mother Goddess with the dove that was her epiphany" and, in earlier traditions, they "would have been unified in one being called the Bird Goddess".[26] In pre-historical Celtic tradition Mother Earth would be celebrated as a "source of fertility", with her "sometimes represented with baskets of fruit or horns of plenty, or with children in their laps".[27] It can also be pointed out that long before May became the official month of Mary in the eighteenth century, "she had been celebrated as the epitome of the delight of spring on May morning, as she is still, with flowers and dancing and processions in which her statue is carried around the town".[28] These intersecting Celtic, Neoplatonic and Christian understandings symbolically interconnects the Blue Virgin to the morning Sun and spring warmth, with Jesus' green halo and three golden rays suggesting a natural profusion that I will here conduct a *translatio* of by following the historical unfolding of Chartres' story up to the end of the medieval warming.

This cathedral began construction in 1020 and was consecrated in 1260, but it is also a sacred space with a more ancient origin. The first Christian church here stretches this history back to the third and fourth century of St. Denis when the Roman Empire and its Gaul province was transformed by Christianity. Prior to this, Roman records indicate the presence of a Gallo-Roman temple, most likely dedicated to the Roman divinity closest in form and character to the dominant deity of these Celtic Carnute people. Archaeological evidence around Chartres has found that the buildings of these Celts who entered this area of Europe 600 and 800 B.C.E. was preceded by the megalith builders of dolmens like Stonehenge in England that date from between 4,000 and 6,000 years ago. It is with the Carnutes that Roman records first offer insight into what Chartres may have meant to pre-Christian people. Both traditional stories and Caesar's testimony describe this surrounding land as a huge forest, with the place known as Chartres being a Celtic *nemeton*, "a vast clearing surrounded by impenetrable forests" where "Druidic worship was celebrated".[29] A possible ecological

dimension of why Celtic people considered *nemetons* to be sacred comes from today's Western science which has found the forest's edge to be "a privileged area of exchanges" between light and shade plant species, and consequently where "almost all species that live in both environments meet, confront each other and mix as they search for their food".[30] The sacredness of Chartres may have originated with the ecological abundance of this particular forest edge.

While the medieval warming facilitated the resurgence of Gaul's forest until around 1200, the almost coinciding fall of the Roman Empire provided space for the continuation of pagan ways up until the Carolingian period. At this time, Emperor Charlemagne worked with the Christian Church to actively convert Gaul's sacred sites and people.[31] Celtic pagans who believed that "the entire natural world was inhabited and controlled by unseen powers" often converted to Christianity due to this political pressure, but they still "expected the new God to intervene as often and as powerfully in nature as the old".[32] When this did not occur, many would revert to traditional practices, like worshipping in wooded areas. The eventual syncretic result was that many sacred trees from the Celtic tradition became places for venerating the Virgin Mary. Sacred oaks were a common home for chapels, such as the one near Mailly that shelters a "trunk in a niche consecrated to the Virgin Mary".[33] Near Domrémy, during the time of Joan of Arc, people were still celebrating mass at the "arbre aux fées", or fairies' tree.[34] This sacred veneration of trees that continued throughout the medieval warming was also intimately tied to the subsistence provided by the forests, as epitomized in the many hunters who celebrated mass within the tree cover.[35] Daily, seasonal and monthly life practices led medieval people into Gaia's expanding forests as places of worship, contemplation, shelter and sustenance. Bechmann explains that until the fourteenth century the forest and farm "were not absolute opposites", rather the land was largely a forest broken up by "cultivated clearings".[36] The population obtained game, wild plants and honey from the forest to compliment and supplement agriculture, with the forest floor providing a place for domestic animals to graze.

There was also a large source of free wood and charcoal that was used for fuel, timber was harvested for buildings, and in times of trouble, the woods themselves would offer refuge to "those who lived on the fringes of society".[37] During the Norse invasions that were integral to Notre Dame de Chartres' evolution, these forests "offered a shelter that was always available for the population of the countryside".[38]

It is not until the early-tenth century, following the second attack of the Norse, or Normans as they were known in Gaul, that Chartres becomes primarily associated with the Christian Mother Mary. Nine years after the first Norman attack of 858 which saw Chartres burned, pillaged and the people massacred, Charles the Bald gave the town a "precious relic known as the Virgin's Tunic, which was allegedly given to Charlemagne by the emperor of Constantinople".[39] This Byzantine relic inspired the restoration of the cathedral, but the work was interrupted in 911 when the Danish Norman chief known as Rollo guided his army to a second siege of Chartres after his attacks on Scottish and Irish coasts.[40] The Virgin's Tunic was displayed as the town's standard, and legend has it that the troops were so inspired that the Normans were routed.[41] While political negotiations with the Carolingian Empire led to the invaders settling in what is today Normandy, in Gaul's popular imagination Chartres became the place where the Virgin protected Christians. Her shrine was not a universal power, "she was Our Lady of Chartres" where pilgrims could find spiritual shelter in a local manifestation of the One's emanations.[42] The forest timber would temporarily support the building of Notre Dame's sacred shelter, while forest vines and leaves would inspire many symbols such as those climbing the periphery of the Blue Virgin. These cathedral images were not the only spiritual offerings of the forest, for the *nemeton's* abundance called forth successive generations of pilgrims through Gaul's surrounding woods and towards the gothic spiritual re-birth of Notre Dame de Chartres in the twelfth century.

The first occurrence of the term forest or fôret can be found in a 648 charter given to an abbey that "associates the idea of forest with that of solitude".[43] As with the Irish Christian

anchorites, "there were waves of enthusiasm for the 'desert' between the fourth and seventh centuries, associated with the abandonment of cities of the ancient world, and again in the eleventh and thirteenth centuries in reaction against the renewal of urban growth".[44] When "medieval monks established their monasteries in remote locations abandoned by most people, but still close to human settlements", Markale proposes "they were simply following the example set by Breton and Irish hermits, who themselves were following the example of the Druids".[45] The forest was seen as Gaul's version of the island desert or Atlantic Isle, a place empty of human civilization where many went, in Jacques Le Goff's words, "to behave as men of nature, fleeing the world of culture in every sense of the word".[46] In 1073, Evrard of Breteuil vacated his post as viscount of Chartres so as to enter the forest's solitude, sustaining himself by making charcoal.[47] An eleventh century sermon by Peter Damian states: "We have abandoned everything: those are the words that have filled the forests with anchorites". These ideas were echoed again by Bernard of Clairvaux, founder of the Cistercians, in the twelfth century when he told youth who were considering the urban schools that "the forests will teach you more than books. The trees and rocks will teach things that the masters of science will never teach you".[48] St. Bernard came to deeply influence Western Europe, leading many religious orders, like his own Cistercians, "to settle in the forests".[49] The expansion of spiritual pilgrims walking through Gaul's forests during the medieval warming is a story that resonates with Chartres' *nemeton* abundance and the spring radiance of Christ's green halo sitting on the Blue Virgin's lap. To contemplate the twelfth century meaning of this green symbolism it is helpful to turn to Hildegard and her conception of *viriditas*.

Born in 1098 in the Rhine region of Germany bordering present-day France, Hildegard was an extraordinary female influence on twelfth century Catholic cosmology, natural history, medicine and music.[50] Reflecting on the multiple dimensions of her life's work, Anne King-Lenzmeier states that Hildegard "exudes a mystical polyphony" that harmonizes the different strands of life and work within divine experiences that "possess a dense texture and a

multivalent sense of meaning".[51] As if inspired by the Blue Virgin's radiance, Barbara Newman explains that her symbolically rich "spiritual awareness was founded in what she called the *umbra viventis lucis*, the reflection of the living light".[52] She describes visions and heavenly voices emanating from an intense light,[53] not unlike Adomnán's description of Colum Cille's angelic visitations. Newman's research leads her to propose that "a great deal of thought, prayer, conversation, reading and revision most likely intervened" in the symbolic *translatio* of these visions into Neoplatonic imagery that could "be presented as heuristic device for the benefit of readers".[54] As with Eriugena's leaning towards a mystic embrace of a theophany that contrasts Dionysius' extinguishing of the self within the One, Hildegard's symbolism reveals a way that approaches the ineffable by making "the strongest positive statement her tongue could express".[55] Elsewhere, Newman finds that the wisdom which "mystics of the *via negativa* achieve by the systematic denial of images" Hildegard reached with a profusion of symbols that "fade into one another with dazzling and dizzying speed".[56] In this Neoplatonic cosmology, *viriditas* was important to the woman who would become St. Hildegard because it symbolized the relation between Gaia, theophany and the One. As such, her ancestral guidance from the theophany offers a symbolic key for conducting a *translatio* of the Blue Virgin's medieval warming and expanding forest.

Hildegard uses *viriditas* to refer to a fresh green that "represents the principle of life, growth, and fertility flowing from the life-creating power of God".[57] *Viriditas* is described in much of her writing, but nowhere is it more beautifully represented than in the collection of songs known as the *Symphonia.* Among these songs that were used by her Benedictine Order during times of contemplation, the *Song to the Virgin* sings:

> So the skies rained dew on the grass
> and the whole earth exulted,
> for her womb brought forth wheat,
> for the birds of heaven made their nests in it.[58]

Decoding this imagery, Newman explains that in using natural images with no direct reference to Mary Hildegard associates Her with the green Earth, the dew with the Holy Spirit and the Christ child with that divine energy which brings sustenance and shelter into the creation.[59] Moving onto the *Responsory for the Virgin*, Hildegard exalts:

> But the Holy One
> flooded her with warmth
> until a flower sprang in her womb
> and the Son of God came forth
> from her secret chamber like the dawn.[60]

Newman finds that Hildegard's continual association of Mary with "images of growth, greenness, flowering" suggests that She is symbolically experienced in the ever-present *viriditas* of Gaia's dawn and spring.[61] Guided by Hildegard through the forest into the *nemeton* that is Notre Dame de Chartres, the pilgrim enters the green halo of the Christ child's *viriditas*. Beyond the green canopy and "birds of heaven" which fly through the Blue Virgin's flowing air and water garments is the One's divine energy which emanates the *viriditas* of this expanding forest. This Christian awareness was central to the spiritual renewal of the Christian hermits and their many followers during the medieval warming.

The spiritual *viriditas* of this forest hermeticism gradually became eclipsed by a divine irony which reveals the primary importance of Dionysius' *via negativa*. Because the hermits and early monastic orders "wanted the isolation provided by the screen of forests", Bechmann finds these abbeys to be "responsible, directly or indirectly, for important deforestations".[62] The hermit known as Robert d'Arbrissel "had retired to the forest of Craon", but was "surrounded by so many disciples that he had to send them into other forests, after which they gathered in colonies and founded new abbeys".[63] This process is observed throughout France, where many Cistercian abbeys were traditionally qualified as "du-Bois" or "au-Bois", but this qualifier "disappeared from the toponymy at the same time as the forest".[64] These religious

deforestations of the Blue Virgin's *viriditas* did not always come about inadvertently, for sometimes there was a different Christian mission informing the clearance. As with the Norse and Inuit, Gaul's preceding Roman Christian missions were often informed by a passion to reduce the pagan voices of the wild. Bechmann explains that "reducing the forests was the occasion to cut down or to 'christianize' a few of those numerous sacred trees around which were maintained superstitions inherited from paganism".[65] Of these pre-Christian traditions, "the worship of trees and waters was the most resistant".[66] When post-Carolingian conversions occurred it became popular to use Dionysius' celestial hierarchy as a replacement for pagan spirits and deities. As Newman states, "a heaven and earth swept clean of rival deities" was "quickly repopulated with angels, saints, and other mediating spirits".[67] Despite this Neoplatonic repopulation of the Blue Virgin's symbolic *viriditas*, by the fourteenth century's approaching *Little Ice Age* France was increasingly under fundamental pressure to clear "the fiendish creatures that populated the forests".[68] These continual pagan clearings were coupled with the forest reductions of expanding hermit abbeys and the continued presence of ancient *nemetons*, resulting in a recession of France's forests "from 30 million hectares under Charlemagne... to about 13 million at the beginning of the fourteenth century".[69]

Of significant influence on Gaul's post-Carolingian deforestation was the building of those same cathedrals which honored the One's emanating *viriditas* through Nature's many. The amount of cathedral construction occurring between 1050 and 1350 led one medieval authority to propose that "more stone was cut in France alone than at any period in the entire history of Egypt".[70] Beyond the use of lumber in structurally supporting this gothic stone-building, it is also estimated that "One hundred square metres of timber were needed for every square metre of stained glass".[71] The historical specter of this relatively quick Gaul deforestation leads Peter Coates to argue that contrary to Merchant's thesis about the sustainable character of medieval holistic practices, "the scale and intensity of environmental interventions before the scientific revolution" reveals their dark environmental potential.[72]

Also factoring into this darkening deforestation was the agricultural needs of a French population that rose during the medieval warming from 6.2 million in the eleventh century to 17.6 million by 1300.[73] Over time more and more clearances were "converted into permanent fields in which fertility had to be maintained by new methods - rotation of the crops, fertilizer, ameliorators - and so the forest dwindled".[74] These medieval changes to Gaul's forests symbolize civilizing dynamics in the heart of the pre-Enlightenment hermetic tradition that are interrelated to an abnormal rise in those CO_2 cycles which emanate from either side of Notre Dame de Chartres' Blue Virgin.

While most research points to the Industrial Revolution and its GHG emissions as the genesis of the West's climatic uncertainty, Ruddiman has brought together scientific data with historical records to propose an earlier role of human deforestations in the CO_2 changes of the climatic theophany.[75] He hypothesizes that the human impact on the climate began 8,000 years ago with deforestations related to agriculture. Drawing upon an extensive paleoclimate record which reveals regular atmospheric CO_2 cycles that reached "peaks of 280 to 300 parts per million during warm interglacial climates to lows of just under 200 parts per million during major glaciations", Ruddiman noticed an aberration in the pattern following the last Ice Age.[76] Starting approximately "8,000 years ago, something different happened", rather than decreasing the CO_2 "began a slow rise that continued until the Industrial Revolution".[77] Since the three previous interacting orbital cycles displayed no examples of Gaia's processes being linked to this timing of a CO_2 rise, he researched the possibility of a lengthier history of human-generated climate change than the past two centuries of industrial emissions. He proposes that the primary way humans could release 300 billion tons of CO_2 during this time period is through civilizing developments and population increases that required massive deforestation, both of which are signified in the post-Carolingian cultural changes of medieval Gaul. Utilizing ecological methods for calculating CO_2 release per one km^2 coupled with historical research on humanity's global deforestation, he finds that agricultural clearances up

until 2,000 years ago accounted for 200 billion tons of CO_2, with another 30 billion tons coming from pre-historical peat and coal burning. This extended role of human actions in climate change becomes even more apparent with France's approaching *Little Ice Age*.

Until 1300, Western European farmers could choose to increase harvests by moving to richer land. However as the population rose, there was less space available. The population began colonizing "bogs, fens, heaths, woodlands, and other rugged terrain", but this land was "unable to support intensive cultivation and was likely to be quickly exhausted, thereby leaving them exposed on the downward slide of diminishing returns".[78] The situation would be made worse by the onset of the *Little Ice Age*. From 1284 until about 1310, much of Europe experienced a warm and dry climate that was beneficial for agriculture. This began changing in 1315 when shifts in the North Atlantic Ocean brought cold and wet storms to the continent and an eventual famine. Despite the reduction in yields of wheat, some abbeys and cathedrals were able to profit through the offerings of "pilgrims praying for better weather".[79] The French climate historian, Emmanuel Ladurie, relays a description of the terrified people from Chartres who in 1315 prayed "for deliverance from rain and the return of abundance":

> We saw a large number of both sexes, not only from nearby places but from places as much as five leagues away, barefooted, and many even, except the women, in a completely nude condition, with their priests coming together in procession at the church of the holy martyrs, and they devoutly carried bodies of the saints and other relics to be adored.[80]

Peasants often used special saints, spirits and rustic gods of the theophany to protect their "farms and harvests against storms or against too much or too little rain".[81] With the weather changes of the *Little Ice Age*, people would have to diversify crops so as to include drought resistant and wet resistant plants. Europe's population was increasingly caught in an inflexible situation which brought forth a very different religious fervor than Notre Dame de Chartres' twelfth century hermetic spirit and the Blue Virgin's medieval warming *viriditas*. The *Little Ice*

Age's darkening now undergoes a *translatio* by contemplating the Black Madonna sitting directly opposite the Blue Virgin in the northwestern position from which the Atlantic Ocean's cold and wet winds arrive.

A Black Madonna Ice Age

The Black Madonna's position in this transcendent model of Gaia associates Her with "the realm of darkness, of grief, of death, the realm of eternal mansions of the dead, who await the resurrection of the flesh and the Last Judgment".[82] Contrasting the radiant *viriditas* of the Blue Virgin, the Black Madonna recycles the pilgrim into a darkness that is barely enlightened by the red glow of candles which subtly illuminates Her magnificent golden robe, crown and scepter. Her dark presence evokes the night sky "as a mother who gives birth... to the moon and stars and each morning to the sun".[83] As with the Blue Virgin, the Black Madonna's popularity in medieval France derives from earlier Roman and Celtic pagan symbols such as Isis, Artemis and Rhea.[84] These black goddesses symbolize a fertile potential that gestates in Gaia's dark underworld. Scholars with a metaphoric sensibility explain that the Black Madonna was given this color by sculptors so as to symbolize the *materia prima*, the unorganized potentiality "out of which everything may emerge".[85] This potentiality is represented in Her right hand which holds a heart and the Christ child's finger that is pointing upwards to an arch of golden hearts. These hearts refer to the energetic potential from which the Blue Virgin's dawning *viriditas* eventually cycles forth. She is the potential creation of the uncreated, the promise of spring in the midst of winter, the light of dawn at midnight and the *aurora borealis* in a northern night. The pilgrim is to recognize in Her dark manifestation of the theophany a divine power that can eclipse both Gaia and all human knowledge. For St. Bernard, Notre Dame de Chartres was herself a numinous power that could bring forth this wisdom concerning the "invisible dimension hidden within the outward form of nature".[86] She is symbolically both guide to the hermetic value of Dionysius' *via negativa* and manifestation

of apocalyptic emanations that disrupt the medieval experience of Gaia during the numinous *Little Ice Age.*

To understand the numinous potential of Notre Dame as Black Madonna in relation to the apocalyptic *Little Ice Age* it is helpful to briefly follow the guidance of Rudolf Otto. In the early part of the twentieth century, Otto critiqued contemporary Christianity for not honoring the non-rational aspect of divinity in its focus upon an "one-sidedly intellectualistic and rationalistic interpretation".[87] He describes a historical trend in modern Christianity that tends to undercut the experience of divinity by equating holiness with a goodness that confirms the believer's assumptions. Otto's correction to this self-confirming view of the "holy" was the "numinous", which he describes as a living force that cannot be taught, but rather "can only be evoked, awakened in the mind; as everything that comes 'of the spirit' must be awakened".[88] His critique suggests that the scholastic and living knowledge which is inspired by the Blue Virgin's radiant manifestation eventually needs to come into the presence of the Black Madonna. Though Hildegard is described as not practicing a *via negativa* for engaging such a numinous reality, her visionary powers were intimately connected to "bodily states of sickness" that qualified knowledge and the body's limits within divine dimensions.[89] Before her, Colum Cille and the legacy of white martyrs that entered Gaul with Eriugena would experience this numinous power in a North Atlantic *via negativa*, while many twelfth century continental pilgrims passed through still expansive forests on their journeys that could evoke this same numinous wisdom in the form of uncertain pathways and dark woods that inspired names like *Bois Noirs*.[90] In the presence of the Black Madonna's personified climate of unknowing, a *translatio* of the climatic deterioration which began to hit Europe in the fourteenth century can be contemplated.

To connect the past 8,000 years of aberrant CO_2 patterns to a human climatic uncertainty based in agricultural deforestation, Ruddiman needed to account for the chaotic wiggling of atmospheric CO_2.[91] The past 2,000 years saw these concentrations level off until

about 600 C.E., followed by a brief rise which signaled the medieval warming before steadily dipping from 1100 until the Industrial Revolution. The factor which explained these fluctuating aberrations in the context of an increasing global human population making technological advances was the cycling of epidemics and pandemics through large populations that were increasingly intertwined within geographically expanding trade networks. Analyzing historical research on disease and population losses in India, China, the Middle East, the Roman Empire and medieval Europe, Ruddiman finds this data to strongly correlate with the CO_2 decreases. Bringing the evidence of abandoned villages and cultivated lands together with ecological research which reveals the capacity of forests to reclaim pasture and cropland within fifty years, Ruddiman proposes a mechanism that can pull "CO_2 out of the atmosphere in a few decades".[92] He explains that before the plague arrived a gradual deforestation would have "been slowly removing carbon from the land at rates typical of the interval between 8,000 years ago and the industrial era", but then the pandemic would have caused "mass human mortality, widespread farm abandonment, forest regrowth, and CO_2 removal from the atmosphere".[93] Applying his hypothesis to the epidemics which hit Western Europe in the fourteenth century offers a more detailed view of the human factors involved in the numinous *Little Ice Age* that predominated up until the onset of today's industrial warming.

While the cold and wet arrived from the northwest in the opening decades of Europe's fourteenth century, the most poignant disruption came from the east in the form of the Black Death. During the first half of this century, Central Asia experienced hot and dry spells that triggered "movements of Mongol populations" which first besieged the Black Sea port of Caffa in 1347 with soldiers and plague fleas.[94] The ensuing epidemics spread through Western Europe, resulting in a 33 to 45 percent loss of the population by the mid-fifteenth century. Taken together with the effects of famine, the result was "the abandonment of as many as 3,000 villages across France".[95] This is a trend that Ruddiman uncovers consistently over the past 2,000 years, where pandemics "cause CO_2 reductions" through "population losses" that

allow forest succession.[96] Disease provided space for Gaia's *viriditas* to re-forest the countryside within half a century, thus pulling CO_2 out of the air and emanating a cooling trend that manifested a human experience of Gaia's Black Madonna form over the coming centuries. These apocalyptic aberrations of a cooling climate and rampant disease were of as much religious interest to medieval people as those regular patterns and cycles which revealed a divine communication. The common fear that accompanied thunder, lightning, eclipses and famines was not simply due to the specter of death, but that this death sprang from the divine either as a natural aberration of limited duration or as a response to indiscreet human actions.[97] In contrast to a simple one-off aberration that could be a divine sign, prolonged changes in the climatic theophany could be considered the result of improper human actions based in ignorance, willful neglect or intentional sorcery. Popularly referred to as witchcraft in Europe, sorcery practices were viewed as being intertwined with lengthier aberrant patterns of darkening misfortune.[98]

Throughout the medieval period sorcerers often had more influence than the church because they were closer to the people, understood their language and were aware of common problems.[99] As early as Augustine, the Christian authorities had denounced the practice of farmers accessing sorcerers to protect their crops from either natural calamities or the misgivings of other sorcerers.[100] From the sixth century comes European records of *tempestarii*, people who roamed from place to place conjuring up storms that could ruin crops if a fee was not paid to avert the negative consequences of this power.[101] In 820, the bishop of Lyons "noted that almost everybody - nobleman and commoner, town-dweller and peasant - believed in the supernatural powers of storm-makers".[102] Later sources provide indications of the technique utilized to conjure storms, such as "beating, stirring or splashing water" in a local pond.[103] Even when these practices were not employed with malevolent intent, for many people in a Christian world they "appeared dangerous because it glorified human power and raised it too near to the divine".[104] Magical techniques led people to assume that they knew the

divine will, and this was a conceit that could emanate a darkening divine wrath through the theophany into Gaia. Because of the persistence of this belief in sorcery and its possible disruptive impacts, it should not be surprising that as the fourteenth century's climatic deterioration worsened there was an increase in climatic sorcery accusations.

Bringing together research on the European witch-hunts with climate research, Wolfgang Behringer argues that the "rising attention to witchcraft" was related to the *Little Ice Age's* climatic deterioration.[105] Witchcraft accusations first became dominant in Europe's alpine lands where cold spells took their toll in the early-fifteenth century. These beliefs describe evil forces which are magically employed, either involuntarily or intentionally, so as "to induce illness and death, to destroy livestock and crops".[106] Based on these beliefs, Behringer argues it is no coincidence that the first criminal accusations evolved in alpine valleys that were particularly vulnerable to cooling, extended periods of frost and snowfall, approaching glaciers and depleted harvests. Exemplifying his hypothesis is an early-fifteenth century observation "that for the entire decade 1427-1436 it is only" in the more weather stable year of 1430 "that no execution is reported".[107] The reason for this aberration is revealed in court documents that reflect the dominant interest of secular judges in "weather-making". Looking over the trials that stretch forward into the seventeenth century's Enlightenment, Behringer states that while "it will never be possible to link every witch trial to economic or social causes, the large-scale persecutions were clearly linked to years of extreme hardship, and in particular the type of misery related to extreme climatic events".[108] These events were commonly perceived to be unnatural, with sorcery often suspected as being the source of the changes.[109] Traditional stories that related patterns of extreme climatic aberrations to sorcery found fertile ground in the *Little Ice Age's* dark period of cold, wet, famines and Black Death.

This popular Christian view of climatic sorcery did not exist on its own, for the fifteenth and sixteenth centuries also offered Europe a resurging hermeticism for conducting this *translatio* of the human involvement behind Gaia's numinous weather changes. While

Chartres' twelfth century Neoplatonic Christianity was increasingly marginalized over the following centuries in favor of the Aristotelian scholasticism that became prominent in Europe's urban universities, the spirit of this tradition underwent a Renaissance during the climatically dark fifteenth century. It was at this time that humanists such as Nicholas of Cusa and Marsilio Ficino resurrected a "sapiential theology" that recalled the work of Hildegard and Alan of Lille.[110] One of the pivotal moments in this Renaissance occurred when the Eastern Greek writings known as the *Corpus Hermeticum* arrived in Europe and were translated into Latin by Ficino in 1463.[111] These manuscripts, attributed to an Egyptian priest of antiquity by the name of Hermes Trismegistus, were deemed more important than Plato or Aristotle because of the belief that they were of a more ancient influence that was closer to an Edenic time when the One and Gaia's many were simultaneously experienced by humans.[112] This ancient knowledge was seen as more closely symbolizing a wisdom that had become increasingly separated from humanity. As Yates, Berman and Merchant pointed out in my introduction,[113] hermeticists were deeply interested in uncovering a "wisdom that could reconcile divine contemplation with a zest to know all that is knowable on earth".[114] Following this hermetic Renaissance towards a contemporary climate of unknowing requires leaving the presence of the Black Madonna, exiting Notre Dame de Chartres' Royal Portal and contemplating an evolving *Little Ice Age* sorcery that has apocalyptic potential.

Hermetic Renaissance

One significant practice of many hermeticists during this period of Renaissance was the alchemical procedure of creating the philosopher's stone. Working on the ores from the dark corridors of mines, Eliade describes the alchemical hermeticist as taking on Gaia's role in accelerating their perfection within the furnace that was their symbolic womb for the *translatio*.[115] With the right skill and awareness, this practice could manifest a divine substance, a philosopher's stone that re-unifies those oppositions that bring suffering and

misfortune into the world.[116] Distillation of this stone was seen as "an anatomy of nature" for bringing forth substances that were identical, in Eamon's words, to the spirits which influenced "natural and celestial events, such as weather phenomena".[117] Drawing out the alchemical parallels to Notre Dame de Chartres, Markale proposes that the Christ child is synonymous with the "splendor and potency" of the philosopher's stone which is held "inside the body of Mary" as "the Vessel in which the transubstantiation will occur".[118] Cathedral and furnace are transcendent models of Gaia that call the hermetic pilgrim into a world of greater transformative powers. In entering this transcendent model the hermeticist becomes at one with "the perpetual parturient of a world"[119] that, in this contemplation, continually moves from the Black Madonna's numinous cold to the Blue Virgin's warming *viriditas* and back again.

In this final age of Western hermeticism prior to the dawning Enlightenment, Paracelsus was a giant whose writings provide guidance in the *translatio* of today's climatic sorcery. Paracelsus was born on the Benedictine land of Einsiedeln, Switzerland in 1493. During his short four decades of life which just preceded the Protestant Reformation, Paracelsus became fully versed in scholastic knowledge and deeply influenced by Neoplatonic hermeticism. He attended universities that dotted much of Western Europe, including Paris and Oxford, and would bring this scholastic knowledge into a hermetic practice. As with the spirit of Eriugena, Dionysius and Notre Dame de Chartres, Paracelsus promotes a dialectic practice between knowledge and religious inspiration:

> Natural reason and eternal wisdom belong together. Natural reason may exist without eternal wisdom, when it follows the heathen way, and is not concerned with the Eternal. But eternal reason cannot exist without natural wisdom because man must find the eternal in the natural. Therefore a man who dwells in God is endowed with both to be his guides in all things.[120]

This practice led him to suggest that different views are needed to understand a "great integrated totality in which all created things are interrelated", "nothing has a life that is absolutely its own" and all is informed by the eternal.[121] Here is a hermetic philosophy that resonates with aspects of today's evolving climatic thinking which ideally researches the effect of the West's climatic uncertainty on Gaia's indeterminate cycles through interdisciplinary and intercultural dialogues. Paracelsus also offers a philosophy that provides some discriminating insight into the dark environmental potential of hermetic magic, science and by association my climatic thinking.

As with the popular Christian view that fostered witch-hunts during periods of climatic disruptions, hermeticists like Paracelsus viewed magic as a reality that could be related to practical or malevolent intentions. Following the influence of Dionysius' celestial hierarchy, Paracelsus describes the practice of hermetic magic as being dependent upon angels that can mediate a relation with the One. He proposed that "nothing could pass from us to God" nor from God to us if there were not angels moving "swifter than all our thoughts".[122] In one passage, Paracelsus describes the ability of angels and spirits to manifest in the weather, stating that "their voice is thunder".[123] Hermetic thoughts like these suggest that the *Little Ice Age's* cooling deterioration and Black Death were angelic emanations that manifested a regional Black Madonna form of Gaia due to either divine will or sorcery. Being practitioners of magic who worked with the theophany, hermeticists struggled to clearly discriminate between good and bad magic. This discrimination led Paracelsus to offer techniques that people could use to protect their lands, gardens and house "from all manner of thunder, haile and tempest".[124] While both hermetic magic and sorcery attempted to capture and guide "the influx of *spiritus* into *materia*",[125] Paracelsus' hermetic tradition offered a critique of the sorcerer as one who lacks a *via negativa* for ensuring that magic is guided by divinity rather than self-defined interest.

Because hermetic magic could potentially be used negatively by those who were either ignorant or consciously sorcerers, the tradition was steeped in a world of what Eamon refers to as epistemological and sociological secrets.[126] Epistemological secrets of Gaia were those that could only be known through a revelation that emanated from divinity and infused natural knowledge with spiritual wisdom while in the presence of the Black Madonna's dark forest, Iona's sea roads or Sila's great loneliness. Bringing knowledge together with meditations, fasting, breathing techniques, drugs, alchemical practices or chanting, the hermeticist followed a kind of *via negativa* for producing altered states of consciousness that could facilitate a revelation of these epistemological secrets that emanate from the One.[127] These practices qualified knowledge by initiating people into a divine power that surrounds all that is known and sensed, revealing that even the rock and ores of the alchemist can emanate the One's response to human actions.[128] Since the hermetic method facilitated a greater ability to communicate with Gaia, the theophany and thus the One, it became necessary to ensure that practitioners were aware of the powers involved. This recognition inevitably led to the hermetic use of sociological secrets which protected these practices and understandings from abuse and corruption by the uninitiated.[129] Though this hermetic view of secrets was grounded in the dialectic practices of Eriugena and Dionysius which held as primary the *via negativa*, the latter was often marginalized by those whom Yates classified as pessimistic hermeticists.[130] For Dionysius, denying a contemplative practice that maintains awareness of that which surpasses knowledge amounts to a denial of life's essential paradox: the simultaneous differentiation of creatures and unity of the creation.[131] Without a mystical awareness for lending humility to an evolving knowledge which makes it possible to manipulate Gaia and the theophany, hermeticism could become based upon "the blasphemous conclusion that man can coerce spirit by virtue of his own activities".[132] As was already touched upon in the introduction, many critical historians of science find this pessimistic hermeticism to be a formative influence on the mechanistic science that came to natural knowledge through

experimental practices .[133] Consequently Coates appears to be correct in his critique of Merchant, for it seems that the West's unsustainable environmental practices reach beyond Enlightenment science and political economy into a world of pessimistic hermeticism and *tempestarii.*

Throughout the Middle Ages contemplation was seen to be the crown of the liberal arts, but with the Enlightenment this method would gradually become marginalized, while the operational and experimental practices would be extended. Asking why it is common among Enlightenment philosophers, like Rene Descartes, to so distance the human mind from the world it is trying to understand, Yates argues that it is partially a reaction against the powerful hold of hermeticism.[134] In contrast to a transcendent model of Gaia that could initiate an emergent wisdom through ritual participation in the cycling Blue Virgin and Black Madonna, the evolving rational philosopher held the world at an objective distance and created external models - like the much later GCMs - focused upon that which could be factually known.[135] Yates points out that this rationality built its foundation on the related Renaissance hermetic idea that it was "dignified and important for man to operate" upon Gaia so as to perfect its workings.[136] Hermeticists taught that such a science is a pessimistic hermeticism, a kind of sorcery, but that critical view was receding in favor of an emerging rational vision concerning sorcery, hermetic magic and the climate.

After Paracelsus passed away in 1541 and the Reformation brought its dramatic change to Europe's Christian landscape, the difficulties for hermeticism began with debates concerning the validity of Dionysius' identity. These debates brought to light that his writings belonged to the fifth century, meaning that he could not have been the follower of St. Paul referred to in the Bible. This seriously undermined the credibility of his teachings, leading him to be referred to as the Pseudo-Dionysius. In short order his work also receded into the same obscurity that held Eriugena's banned writings. This blow to hermeticism was followed by Isaac Casaubon's 1614 dating of the *Corpus Hermeticum* to the early post-Christian period,

thus also calling into question its origination.[137] Since Renaissance hermeticism was built upon "the supposed extreme antiquity of Hermes Trismegistus", Yates points out that with this gone "the edifice was doomed".[138] An arising Enlightenment philosophy was given space to replace magic with science in "the great seventeenth century advance".[139] The hermeticist's animate view of Gaia as manifesting the One's emanations would recede from Western consciousness, and with it the *translatio* of knowledge within a transcendent model would be replaced by a mechanistic method interested in harnessing the laws of climate and weather for human benefit. With the West's rational model of a mechanical cosmos in hand, the enlightened philosophers and scientists laid some important cultural groundwork in a climatic sorcery that would replace the *Little Ice Age* with industrial warming.

Enlightening Climatic Sorcery

Though today's historians situate the Enlightenment within the *Little Ice Age's* climatic deterioration, most prominent seventeenth and eighteenth century thinkers on climate proposed that Europe was warming. Drawing upon Du Bos' claim that the genius of the rising European rationality was related to a warming trend, Hume thought the temperature rise was occurring because "the land is at present much better cultivated, and that the woods are cleared, which formerly threw a shade upon the earth, and kept the rays of the sun from penetrating to it".[140] The developing rational mind was seen to be intimately tied to a deforesting of the land that influenced the air, weather and people. Consequently, it was assumed that the deforestation of colonial lands in the Americas would also beneficially change their climates and help manifest rational cultures.[141] This climatic determinism was rebutted in the nineteenth century when science took the climate debate from philosophers through its utilization of meteorological data and statistical analyses.[142] One leading American proponent of this approach by the name of Cleveland Abbe stated that "no important climatic changes have yet been demonstrated since human history began".[143] By the mid-twentieth

century this evolving science would shift once again due to the revelation of the Industrial Revolution's significant impact on climate, leading Westerners to again contemplate a human role in weather changes. Today's IPCC science on the industrial warming guides my climatic thinking to earlier Enlightenment, hermetic and popular Christian views on the human capacity for a climatic CO_2 sorcery. It is the recognition of this tradition of human sorcery that calls me to conduct a *translatio* of the West's climatic uncertainty in the transcendent model of Notre Dame de Gaia as revealed at Chartres.

While there are disagreements about when the *Little Ice Age* began, there is wide consensus that its end can be clearly observed in the second half of the nineteenth century. The Industrial Revolution's onset fuelled a steady rise of CO_2 emissions and the conditions for a population boom that would further the global deforestation of the Blue Virgin's *viriditas* right into the twenty-first century. While the previous 8,000 years resulted in a modest increase of CO_2 by 40 ppm and an average 0.8°C increase in temperature, Ruddiman explains that activities since the Industrial Revolution added another 100 ppm.[144] Over the past 400,000 years there are no examples of CO_2 levels being this high, and if the optimistic projection of a doubling of atmospheric CO_2 from pre-industrial levels occurs over the next century then the atmosphere will display levels not observed in 5 to 10 million years. The possible projection of a four times increase in CO_2 will result in "a level higher than any in the last 50 million years of Earth's history".[145] Since temperature changes have historically lagged behind rises in CO_2 by decades as Gaia fully adjusts to the emanations from the climatic theophany, Ruddiman concludes that the IPCC is probably correct in projecting that the average temperature will increase by 2 to 5°C depending upon these future emissions. When I bring this knowledge in the presence of the Black Madonna - into the climate of unknowing - the West's climatic uncertainty symbolically becomes interconnected to an 8,000 year old human tradition of climatic sorcery while remaining unique in its extreme cultural form.

In totally transmuting Gaia into energy, resources and services, Eliade proposes that Western industrial society has taken on the alchemical magic of accelerating "the natural tempo of things by an ever more rapid and efficient exploitation of mines, coal fields and petrol deposits".[146] He critiques this rational "myth of infinite progress" as a radically secularized version of the hermeticist's philosopher stone, and in the process aligns himself with Yates' definition of pessimistic hermeticism. In expanding the power of science, technology and the market economy, the Enlightenment heralded a more comprehensive climatic sorcery based on larger CO_2 emissions. While past forest clearances increasingly disconnected people from Gaia as one sign of this sorcery, the Industrial Revolution extended this history of CO_2 magic by utilizing the ancient ancestors of trees from the Carboniferous period of the Paleozoic era some 300 million years ago. The "giant ferns and fernlike trees" known as "Lepidodendron and Sigillaria" sat in warm damp swamps and over eons became the industrial era's coal fields,[147] and oil originated in the hydrocarbons of animal fat that was pushed down into what oil scientists refer to as the "kitchen - a geological zone between ten thousand and thirteen thousand feet below sea level where temperatures are high enough (100 to 135°C) to boil organic matter into petroleum".[148] Humanity's dark sorcery has been quickened by a Western dependence on fossil fuels that, Livingston projects, will bring a time when nearly all the "long-dead animalcules" are unearthed "to rejoin their kindred in the great heat sink in the sky".[149] These increasing Carboniferous ancestors mediate the West's growing voice in a climatic theophany of forests, ocean circulations, northern Sila changes and orbital cycles that emanate through Gaia's emergent changes.

Though some may welcome this sorcery by envisioning a warming that manifests the Blue Virgin's *viriditas*, Fagan cautions that the *Little Ice Age* shows that changes in climate regimes are accompanied by weather which shifts "rapidly within decades" in unexpected ways that can disrupt human societies.[150] This is a lengthier Western history of the indeterminate climatic and civilizational forces involved in what Rogers defined as the

development of today's "newly stupid", a dialectic that reveals the apocalyptic potential of emanations which manifest Gaia's Black Madonna response to the CO_2 of human climatic sorcery. In bringing the past 8,000 years into the present, Ruddiman offered my hermetic *translatio* of climatic thinking important knowledge on the West's involvement in a long intercultural human tradition of climatic sorcery. His historical extension is of fundamental importance because it displays the human capacity for engaging that which transcends all human models, and thus highlights the need for a practical climate of unknowing which can keep sorcery in its place. This hermetic *translatio* of Notre Dame's Blue Virgin and Black Madonna also suggests that the witch-hunts were correct concerning the *Little Ice Age's* climatic deterioration being related to sorcery, but were wrong concerning specific deductions about who was to blame. To further ground this hermetic *translatio* of the West's industrial sorcery in a climatic thinking of the present, I will cycle this European hermeticism beyond the Enlightenment and into resonance with the symbols and ecological realities of today's warming emanations. Engaging a French pilgrimage across the historical gap in Western hermeticism that dissipates during the sixteenth and seventeenth centuries is the purpose of my act's next story which follows the legendary spirit of the North Atlantic sea-roads to Canada.

11 Glacial Response of a Canadien Enlightenmêtis (1500 – 1900 C.E.)

ᐊᐅᓯᐃᓕᑐᒥᐅ ᑲᒪᑭᖏᖅᕿᓯᐊᕐᓂᖅᓴᒃ ᑲᓇᐃᑎᐊᓐ ᐃᓐᓪᐃᓕᓐᒥᑎᑦ

ᓴᖅᑭᕿᑦᓪᓕᐊᔪᑦ ᐊᐅᓯᐃᓕᑐᑦ ᓇᒍᖏᓴᕿᓯᓐᓂᒃᑯᑦ, ᐊᓂᕐᓂᒃᑯᑦ, ᐊᒪᒪ ᐃᓯᒪᒃᑯᑦ
Surging glaciers present some of the navigational, spiritual,
ᐱᖃᓕᐊᑐᔨᔪᑕᐅᔾᑦ ᐃᑦᐱᐃᓐᓂᐊᔪᒍᑦ ᓄᓇᒍᑦ ᓇᓪᕿᑦᑐᒍᑦ.
and intellectual challenges of a sentient land that listens.

Julie Cruikshank 2004

ᓂᐅᕆᐃᖅᑕᐅᑎᒃᓯᐅᒃ ᓄᓇᖅᑯᑎᓯ, ᐃᑯᐊᑦᓪᑎᑦᓗᓯᐅᑦᓗ ᐅᖅᑲᒪᒪᖅᓯ,
Sell your lands, burn up your books, buy yourself
ᐊᑦᑕᓇᓐᖏᑦᑐᖅᓂᒃ ᐃᓯᒪᐅᓴᖅᑲᖅᓱᓗᓯ, ᐊᐅᑦᓪᓱᓗᓯᓗ ᖃᖅᖅᑲᓄᑦ,
stout shoes, travel to the mountains, search the valleys,
ᖃᓂᓴᘐᕕᒋᓗᐅᒃ ᓇᖅᓴᐃᑦ, ᓯᐅᖅᑲᐃᑦ, ᓯᓴᖏᓪᑦ ᐃᒪᐅᐸ, ᐊᒪᒪ
the deserts, the shores of the sea, and the deepest
ᖃᒧᖏᒪᐅᔨᖏᓪᓕᖅᑐᑦ ᐃᓯᖅᓴᖏᓪᑦ ᓯᓪᓴᐊᐸ.
depressions of the earth.

Peter Severinus, sixteenth century

ᑕᒃᑯᐊ ᐊᔪᖅᓴᖅᑐᑦ ᐊᑦᓪᓕᐃᑦ ᐃᓅᓂᑯᑎᓪᓗᑦ, ᐱᑕᖅᑲᓐᖏᓐᓂᕆᐃᒪᒪᓕᓐᒧᓐᓇᖅᓯᒪᓐᖏᓪᓕᓪᑦ
As these poor Indians are men, they have not been able to deny the existence
ᔪᑎᑎᒃ. ᱱᐅᓐᖏᓕᔪᓕᑎᖅᑲᓐᖏᓕᒃᑲᓪᓕᐊᕐᑎᒃ, ᐅᓐᓂᑦ, ᐃᓯᒪᓪᑭᐅᑎᖅᑭᓐᓇᖅᑐᖅᑲᓪᓕᐊᑦ ᔪᑎᑎᒃ
of God altogether. Because they are given to vice, however, they are only able
ᒥᑭᑲᐊᖅᑐᑎᒃ ᐊᔪᒪᖅᑲᓐᖏᑎᑦᔨᐊᓐᒧᓂᓕᒪᓂᓕᑦ... ᓴᐸᐅᑦᓪᓕᓄᑦ, ᑰᓐᓂᑦ, ᑕᓯᔾᓂᑦ,
to form conceptions of him that are unworthy of this greatness... They address
ᓇᓐᖏᐊᔾᓇᖅᑐᓂᑦ ᐅᓴᖅᑲᓂᑦ, ᐊᒪᒪ, ᱱᑲᐊᖅᑐᑎᒃ, ᖃᓄᒪᒧᑦ, ᐅᐸᱚᓴᖅᑲᖅᓯᖏᓐᓇᓐᓂᑦ
themselves to the earth, the rivers, the lakes, the dangerous rocks, and, above all,
ᑕᒪᒃᑯᐊ ᓯᓇᑐᐃᓐᓇᐃᑦ ᐅᒪᓯᑦᓪᓕᑦ.
to the sky, in the belief that these things are animate.

Jean de Brébeuf 1636

In 1999, an important symbolic guide for conducting a *translatio* of the West's climatic sorcery beyond the *Little Ice Age* emerged from the melting alpine glaciers of Canada's northern British Columbia. Here both Western scientists and local Tlingit were confronted with the revelation of *Kwäday Dän Ts'ínchi* or Long Ago Man Found. This well-preserved ancestor stepped forward from a 550 year glacial grave that stretched his last breath back to a time when the *Little Ice Age's* glaciers had just begun advancing, and the French were decades away from contacting Native Canadian nations. Making this lengthy journey across history with *Kwäday Dän Ts'ínchi* was his woven spruce root hat, remnants of a squirrel fur robe, tools and DNA that, Doug Macdougall explains, is of paramount interest to scientists who are concerned with knowledge about Native physical and cultural evolution.[1] While Macdougall points out that the Tlingit are also interested in this ancestor's appearance, the absence of any inquiry into the nature of this interest follows a colonial pattern which places the West's post-Enlightenment thought above other cultural and historical understandings, like that of the Inuit, Christianity, Neoplatonic hermeticism and Celtic paganism. Julie Cruikshank's postcolonial research corrects this tendency by following the inspiration *Kwäday Dän Ts'ínchi* offers Tlingit elder stories.[2] Through this she reveals a Tlingit way that allows the ancestral past to mediate an understanding of "new or disorienting situations", with the result being stories that equate the present "disastrous effects of environmental change... with a history of colonialism and its imbalances".[3] *Kwäday Dän Ts'ínchi's* intercultural inspiration guides my climatic thinking to a hermetic *translatio* of France's colonial involvement in a tradition of climatic sorcery that has industrially warmed Canada's glaciers after their brief *Little Ice Age* expansion.

Following the last glaciation some 16,000 years ago, the St. Elias glacier in today's Tlingit land would have been encompassed by the Cordilleran ice sheet which stretched from the west coast over the Rockies and into southern parts of Canada. This ice sheet was dwarfed by the northeastern Canadian Laurentide ice sheet which "sprawled over 13.4 million square kilometers", an area "more extensive than all the present-day glaciers of Antarctica", and which "contained enough water to lower the level of the sea worldwide by up to seventy-four meters".[4] With the post-glacial warming these glaciers began retreating to Greenland, the Arctic and some alpine areas like St. Elias. The Laurentide released its melt-water in more expansive Great Lakes, a long gone Champlain Sea which covered the St. Lawrence Valley, and a Lake Agassiz that immersed "parts of Manitoba, Ontario, and Saskatchewan in Canada, Minnesota and North Dakota into the United States".[5] Shifts in these melt-waters came to significantly impact the climate of North America, Western Europe and the world, with the first climatic change occurring approximately 13,000 years ago as the Laurentide receded and the lake's drainage moved from the Mississippi River to the Champlain Sea.[6] In a relatively short period a tiny rivulet expanded into a deluge of freshwater that entered the Atlantic, thus shutting down the Atlantic's THC and forcing the cooling of the *Younger Dryas*.[7] As the *Younger Dryas* ended and the orbital-based warming trend continued, the Laurentide receded further resulting in the formation of Lake Ojibway between Lake Agassiz and the Hudson Bay. Around 8,200 years ago, another passage opened for the water of these two lakes to quickly enter the Atlantic through the Hudson Bay.[8] The fresh water of these glacial melts consequently "slowed the transport of warm waters from the south, leading to a decrease in average temperatures".[9] As these glacial-ocean relations in the climatic theophany stabilized some 7,000 years ago, the Laurentide receded into Labrador and the Eastern Arctic as the Cordilleran became fragmented in western alpine areas like St. Elias.

The first official French observation of the glaciers in Tlingit land occurred in 1786 when the explorer Jean François de La Pérouse landed on the west coast at Lituya Bay in the

Gulf of Alaska. Just a few decades before his arrival, the New France colony in eastern Canada had fallen to the British. La Pérouse now had instructions from King Louis XVI "to match in the North Pacific the scientific and cartographic achievements that James Cook had accomplished for England in the South Pacific".[10] La Pérouse's colonial service over the last years of a French Crown exemplifies the introductory critique of Berman and Merchant that the early ascendancy of Enlightenment philosophy and mechanistic science was facilitated by powerful political economic interests.[11] Cruikshank writes that upon their arrival, the crew "installed the ubiquitous observatory with its chronometers and dipping needles, signifying that the work of science was beginning".[12] There was one phenomenon beyond all others that impressed upon La Pérouse the need for science's Enlightenment. On the St. Elias mountain range were the remnants of a Cordilleran glacier which, according to Cruikshank, he imagined even in this reduced form as "manifestations of the Sublime - great yet terrible, wondrous yet fearsome".[13] Arriving during the latter decades of the *Little Ice Age*, the St. Elias mountain glaciers were still "changing dramatically" due to the period's cooling.[14] In the face of this numinous ice, the explorer took comfort in a science and technology that allowed him "to measure nature's dimensions, tame its uncertainties, and ascertain its physical attributes".[15] It was a few centuries prior to this enlightened French arrival that the *Little Ice Age's* cooling came to embrace *Kwäday Dän Ts'inchi* in spreading ice that did not release him until the industrial warming began melting glaciers.

From his ancestral melting also flowed Tlingit elder stories that contrast La Pérouse's pre-occupation with scientific certainty. Resonating with McEvoy's introductory proposal for a mutually constitutive conservation science,[16] Cruikshank states the Tlingit sense "relations among humans and features of the landscape", like "mountains, bays, and glaciers", as being "mutually constitutive".[17] This cultural view envisions the numinous movements of glaciers as a sentient power which senses human actions and engages human senses with unexpected changes. Paralleling this Tlingit view are depictions of popular Christian responses from

France as the *Little Ice Age's* glaciers advanced from alpine lands to reach their maximum extent by the mid-seventeenth century that were largely maintained until the mid-nineteenth century .[18] The reduced harvests, due to colder weather, shorter growing seasons, increased precipitation and the loss of less fertile land to snow and ice, led many to see these glacial advances as either signs of a divine apocalypse or the result of climatic sorcery. One Jesuit text describes a 1593 procession that walked for four hours through rain and arrived at the end of the glacier so as to conduct a mass.[19] In 1653, two Jesuit fathers led another procession to a different glacier where mass was celebrated, holy water was sprinkled as part of an exorcism and "an effigy of St. Ignatius" was left behind.[20] These stories reveal a French culture engaged in a religious dialogue around icy phenomena that many post-Enlightenment Westerners, like La Pérouse, would consider inanimate features of the land. Jesuit and Tlingit spiritual approaches to glaciers would come to be commonly characterized by Western rationality as superstitions that limit the taming of Gaia for political economic powers.

While this inhibiting interaction of rational science and political economics will in this story be characterized as a significant dynamic in the West's climatic sorcery, the melting of *Kwäday Dän Ts'inchi* will facilitate my symbolic *translatio* of the hermetic tradition. More specifically, hermeticism needs to symbolically cross an Enlightenment gap that uses science to silence understandings which are not aligned with Western power. Central to my eventual elucidation of a twenty-first century hermeticism will be the intercultural wisdom which can emerge from Cruikshank's following assertion. As she states, the moment of colonial contact is "not merely a story from the past, but one whose consequences continue to cascade through twenty-first century debates, such as those framing environmentalism, biodiversity, and global warming".[21] In spanning a period that saw French Jesuit and pagan views come into contact with Native Canada prior to La Pérouse and Britain's national founders, *Kwäday Dän Ts'inchi* ancestrally inspires a climatic unknowing of my country's changing glacial emanations and cultural ways.

Black Robe Sorcery

In 1678, the Catholic Huron living in Lorette near Quebec sent a prayer with wampum belt to Notre Dame de Chartres. Translated into French by a Jesuit missionary, it offered a blessing that calls forth the Blue Virgin's *viriditas*:

> Blessed Virgin, what joy we feel that, even before our birth, the town of Chartres built for you a church… Oh, how happy are the Gentlemen of Chartres, and how great are their merits for being your first servants!... This is, Blessed Virgin, what we are doing today, in connecting ourselves with the Gentlemen of Chartres, that we may have with them only one mind, one heart, and one mouth, to praise you, to love you, to serve you.[22]

They go on to exalt Mary as "one who not only has given birth, or is giving birth, but who will always give birth until Jesus is perfectly formed in us all".[23] In exchange for these words and gifts, Chartres returned a prayer with precious remains of departed saints and an object resembling the Virgin's tunic.[24] This Jesuit mediated sharing between the newly converted Huron and Chartres guides my *translatio* to a New World story on the Catholic deforestation of pagan cultural ecologies as part of the West's colonial tradition of climatic sorcery.

While the Jesuits were helping France's peasants interpret and respond to the cold, wet and expanding glaciers of the *Little Ice Age*, they also began extending their influence into a Canadian land that "was colder than in the present century" and was experiencing significant glacial advances in the far north of Baffin Island.[25] Their colonial mission was to convert Natives and the land to God's purpose, and their progress is most clearly highlighted in the seventeenth century *Jesuit Relations* on their contact with the Huron. These reports that tried to stir up French support for the missionary effort today offer insight into actions that are informed by Old Testament stories of Cain and Abel, hunter and farmer, wilderness and civilization.[26] They describe Canada as a wilderness that is "barren, abandoned, and frequently

hostile" in both physical and spiritual terms.[27] When Father Le Jeune arrived in the St. Lawrence Valley in 1632, he stated that "everything depends upon clearing the land", for "clearing the forest would reduce the cold, eliminate insects, and improve the quality of the air".[28] This common French view also shared with later Enlightenment thinkers saw agricultural actions as creating a land that would be better suited for Europeans and for the civilizing of the Native population. Agriculture was a practice that could overcome Gaia's forests just as Jesuit asceticism overcame the body in preparation for God's arrival. To get a sense of this New France mission that would come to so impact the Huron, it is necessary to briefly follow this Catholic Order from its founding mission.

The year 1534 bore two significant events that would influence the early Canadian contacts between the French and Native nations of the St. Lawrence Valley and Great Lakes regions. While Jacques Cartier would undertake the first official French exploration of the area that would become New France, this year also saw the founding of the Jesuits by Ignatius of Loyola at the University of Paris. Confirmed by the Pope in 1540, the Jesuit Order is often depicted as the Catholic "shock troops of the Counter-Reformation" whose mission was to defend souls from the Protestant Reformation, but many historians have revealed this to be only a partial reality.[29] Donnelly points out that in Ignatius' writings Martin Luther is only mentioned once, and that many of the early Jesuits were recruited from Portugal and Sicily, places where Islam was seen as a bigger problem than the spread of German Protestantism. What connected its Islamic beginnings with an eventual resistance to Protestantism was Ignatius' innovation of the monastic model. Jesuits had to perform "an active ministry… among non-Christians abroad and among Catholics closer to home who had become or were at risk of becoming Protestant".[30] By the time of his death in 1556 there were about one thousand Jesuits engaged in this religious mission, a number which expanded to 8,519 in 1600 and 19,998 in 1700.[31]

Externally there were the threats of the Protestant heresy, Muslims and various forms of paganism in Europe and abroad, but for the Jesuits this external manifestation of evil also had internal dimensions. As Greer states, Jesuits saw "pride and other classic vices, as well as various evil temptations associated with 'the flesh'", as realities that needed to be transcended by true Catholics.[32] Since spirit and flesh were irreconcilable, one needed to side with the spirit through a denial "and mortification of the flesh".[33] Guiding this work was Ignatius' *Spiritual Exercises* which "outlined many of the spiritual principles of the order", as well as offering a thirty day process of prayer for directing novices.[34] On top of prayer and contemplation, these *Exercises* promoted bodily penances such as fasting, denial of sleep, "scourging one's back with a small whip, and wearing a hair shirt" so as to keep the body and its sins in line with the divine.[35] This discipline that prepared the individual for the "long delayed victory of Christendom over Heathendom"[36] came together with missions to manifest what Greer states was often a ruthless worldly "pursuit of their goals".[37] This joining of contemplation with worldly pursuit was a monastic innovation that, in the eyes of many conservative Catholics, made Jesuits almost as suspect as Protestants who were branded "with the Latin word *novatores*, 'innovators,' enemies of traditional religion".[38]

While some Catholics may have been wary of the Jesuit's combining of asceticism with missionary work, many religious historians and sociologists suggest that this approach is part of a lengthier Christian tradition. Max Weber's research on the Protestant ethic is the most familiar analysis of the ascetic roots of today's rational approach to the world, but it is often forgotten that he also proposed that it was with the Rule of St. Benedict that monastics were given the space and time to develop "a systematic method of rational conduct with the purpose of overcoming the *status naturae*, to free man from the power of irrational impulses and his dependence on the world and on nature".[39] As the medieval warming progressed, the Benedictines and their later twelfth century branch of Cistercians informed many of the monasteries that had originally been forest hermitages.[40] While the Rule of St. Benedict

originally only allowed monks to spend a quarter of their day on liturgy, by the eleventh and twelfth centuries an increasing social support system of lay brothers and followers allowed study, meditation and prayer "to fill practically the entire day".[41] Following Weber's lead, Lutz Kaelber finds that starting in the eleventh century Benedictine monks used their free time to re-direct concern from secular spheres to those more directly related to ensuring the salvation of souls.[42] As monks became increasingly focused on a more transcendent way of living, the ascetic rationalization of the world fell to the lay brothers.

It is around this time that Western Europe's monasteries came to lead "the way in the application of new technologies" like the water mill and cropping patterns, in the transferal of "time-management techniques" from spiritual practice to "productive routines" and in the stimulation of "economic development by acting as banking and credit institutions".[43] Kaelber argues that by the twelfth and thirteenth centuries these lay ascetics came to inform religious movements like the Cathars and Waldensians, forerunners of the Protestant Reformation. Coinciding with this practically oriented lay asceticism was the fourteenth century's Black Death, which Herlihy and Levine suggest brought an anxiety and introspection that also spread Christian ascetic views to the broader population.[44] A monastic asceticism that inwardly focused on the dark reality of death, the afterlife and securing individual salvation became dominant themes in the minds of many individuals who lost family, friends and communities. It may even be proposed that Ruddiman's delineation of an interaction between the Black Death and *Little Ice Age* facilitated popular Christian innovations that were originally built upon a physically demanding ascetic ritual for engaging the One. While Weber argues that Protestants continued this Christian re-direction based on their view that God deemed surpassing "worldly morality in monastic asceticism as unacceptable",[45] the Jesuits would respond with a Catholic innovation. Ascetic practices would be used to change the world in response to the religious turmoil of these cultural and ecological changes.

Across the Atlantic in New France this Jesuit mission focused upon agriculture as an ecological asceticism that could bring Native Americans and their land under God's dominion. The Jesuits replaced the Franciscan Récollet Order as the colony's religious leaders in 1625.[46] Nine years later, in July 1634, Fathers Daniel and Brébeuf were the first Jesuits to be guided into the Huron country to the west on the coastal areas of Lake Huron and Georgian Bay. Prior to their arrival, it is estimated that the Huron nation numbered "between eighteen and forty thousand people, distributed in eighteen to twenty-five villages".[47] Though the French called these people the Huron because of "the bristly coiffures of the warriors", they referred to themselves as the Wendat, the islanders.[48] The fact that the Wendat practiced agriculture gave Jesuits, like Father Le Jeune, a fertile optimism that their ascetic mission could be planted in this region of Gaia. Despite the Wendats agricultural practice, it was obvious to the Jesuits that they were in need of conversion. One missionary said the corn fields were so large and unorganized that he often felt more loss there "than in the meadows and forests".[49] In contrast to the agricultural discipline envisioned by the Jesuits, the Wendat planted corn stalks, beans and squash together so that their interactions provided symbiotic ecological benefits:

> Corn stalks became ready-made beanpoles, while the beans, in turn, fixed the nitrogen in the corn hill, providing essential nutrients. Squash, because of its sprawling growth pattern, made it difficult as it matured to hoe the weeds from the ground around the hills. But once the large leaves of the squash reached full growth, hoeing became largely unnecessary, as the squash leaves deprived weeds of sunlight, and choked off their growth.[50]

These Wendat practices were seen as sensual, brutish and requiring civilizing cultivation, with the *Jesuit Relations* referring to the Wendat and other Natives as *sauvages* that are "like the uncultivated landscape".[51] The Wendat were embodiments of the European myth of the Wild Man and Woman,[52] and their pagan ways needed to be deforested.

Contrasting the evolutionary view of today's science, Europe's Wild Man myth suggested that *sauvages* had entered into a descent from civilization when sometime in the past they were separated from "the protective bounds of the church and Christian civilization".[53] Through reacquainting the Wendat with the church and its practices the Jesuits believed that this descent into paganism - most extreme in hunter-gatherers - could be halted. Some Wendat practices, like agriculture, suggested that their descent had not fully progressed. In 1636, Father Brébeuf also wrote about God being worshipped by the Wendat, though in ways that were "unworthy of his greatness" since he was being addressed in "the earth, the rivers, the lakes, the dangerous rocks, and, above all, to the sky, in the belief that these things are animate and that some powerful spirit or demon resides there".[54] Describing Wendat sky ceremonies that resonate with an IQ view of Sila, Brébeuf states:

> They have recourse to the sky for almost all their needs, and respect the great bodies in it above all creatures, and remark in it in particular something divine. There is nothing which represents divinity to us so clearly. We perceive its omnipotence in all the prodigious effects the heavens cause here on earth, its immensity in the sky's vast extent, its wisdom in the orderly movement of the heavenly bodies, its goodness in the benign influences it sheds continually over all creatures, and its beauty in the sun and in the aspect of the stars.[55]

This similarity with Christianity was important to Brébeuf because it reflected a divine aid for leading these people back "to a knowledge of their Creator, since they already give special honor to a part of His creation which is such a perfect image of Him".[56] The use of complementary pagan beliefs gave Jesuits a way to make conversion more accessible and attractive.[57] All they needed to do was help the Wendat de-animate their world so that all praise could be converted away from wild Gaia and towards God.

To effect this conversion the Jesuit mission coupled these religious strategies with the practical benefits of French celestial knowledge, metal technology, medicine and trade. Since

trade offered a powerful means to influence the Wendat, the Jesuits often cooperated with traders "whenever it was in accord with their religious mission".[58] But by far the most effective tool for conversion was the use of these social pressures in relation to the epidemics that began impacting the Wendat one year prior to the 1635 arrival of Jesuits in their communities.[59] A couple of years later another pandemic struck, reducing the Wendat population by about half.[60] The population losses suffered by Native Americans as Western Europe's agricultural-based diseases arrived is, according to Ruddiman, interlinked with the cooling changes of the *Little Ice Age*.[61] Drawing upon the evidence of approximately 50 million people dying on this continent between 1500 and 1750, he explains that this timeframe of the greatest pre-industrial pandemic "closely matches the third and largest CO_2 drop" over the past 2,000 years.[62] Research suggesting that many Native nations, like the Wendat, primarily farmed and supplemented with hunting and gathering, led Ruddiman to propose that as with Europe's Black Death areas which were abandoned became re-forested in a half-century. The resulting dip in CO_2 due to its sequestration in these expanding forests brought forth the *Little Ice Age's* next cooling trend. With it came expanding glaciers that are reported from the late-sixteenth to the eighteenth century in Native American stories like those of the Tlingit. As colonists moved beyond the Atlantic sea-board, western regions were interpreted as forest wildernesses that had always been devoid of human settlement and were now in need of civilizing agriculture. In Canada, this nineteenth and twentieth century colonial deforestation begins in the seventeenth century with the Jesuits utilizing the impact of these diseases to convert Wendat and the land, an early colonial practice in climatic sorcery.

Reminiscent of Gaul's popular pagan-Christian responses to the Black Death and the *Little Ice Age's* famines, the Wendat responded to these diseases with traditional medicine and rituals that were largely ineffective for dealing with the new exotic arrival. These destructive changes interacted with Wendat observations of what was seen as strange, uncooperative and selfish behavior amongst Jesuits who guarded trade goods, baptized the dead and had no

productive role in sharing community tasks.[63] Since traditional Wendat beliefs associated selfishness and anti-social behavior with signs of sorcery, some accused the Jesuits of a sorcery that was bringing this disease. Others interpreted the value of French technology and knowledge as evidence of a superior God.[64] These two diverging Wendat movements are highlighted in the spiritual battle between shamans and those Jesuits whom they referred to as Black Robes.

Wendat shamans were not the equivalent of European priests, for unlike the Black Robes they had neither institutional support which would allow them to disengage from productive tasks nor a "monopoly of access to sacred things".[65] While individual dreams, communal rituals and initiatory vision quests gave any Wendat access to the divine, the shaman had a heightened talent and learning in things spiritual. If someone seemed to inherit these spiritual capabilities, they would be initiated into shamanism beginning with a one month ritual fast carried out with the support of an elder.[66] Initiated shamans could help the community interpret dreams, recount myths, communicate with spirits, use great plant knowledge to treat the sick and guide rituals such as those concerned with rain-making for agriculture.[67] The Black Robes were concerned about the shaman's power, especially when their rituals worked, for success suggested "the assistance of supernatural forces that, because they did not derive from God, must be diabolical".[68]

With the new diseases arriving from European ships, it was more often the case that shamanic rituals were not successful. This was an opportunity the Black Robes utilized, for, as Delâge points out, the evidence indicates "that it was often the people who had lost or suffered most who were the most receptive to the evangelical message".[69] As with Europe's popular ascetic changes related to the Black Death, the Wendat perceived something of value in the Christian message. At first the converts oscillated between the new Christian and traditional Wendat views, such that when the Black Robes failed in their celestial predictions, prayers or medicine many would lapse in belief.[70] Most seemed to take a half-way approach that

integrated the Christian God with a host of Wendat spirits and divinities,[71] much in the same spirit as the Celts and Inuit. Despite this syncretic potential, it did not take long before some converts refused to participate in traditional rituals because of conflicts with Christian beliefs.[72] To progress the conversion, Black Robes made it such that only Christian chiefs, traders and warriors would receive the benefits of French goods and military alliances.[73] By the late 1640s there were wholly Christian Wendat villages where new converts could go to live so as to not be corrupted by pagan beliefs. Looking at the unbearable fragmentation of Wendat culture, Trigger states that Jesuit "spiritual values led them to place the salvation of individual souls ahead of the collective safety and well-being of the Huron people".[74] In 1649, Ossossané, or the "believing village" as referred to by Wendat traditionalists, was destroyed by the Iroquois Five Nations. As part of a two year campaign, the Five Nations destroyed both Christian and traditional Wendat settlements, killed hundreds and tortured two Black Robes to death. Those who survived were dispersed into the Five Nations as adopted captives, other Native cultures such as Algonquin nations and to the Jesuit reserve of Lorette in New France.[75]

In 1680, the Huron of Lorette sent a letter of thanks to Chartres for their words and gifts. They began by writing that "we have borrowed the aid of our fathers who instruct us, to relate to you what the council of our assembled Huron nation desires that you should know".[76] While the letter goes on to describe the Huron understanding of Christianity, the pattern of their colonial destruction opens my climate of unknowing out to a Wendat apocalyptic story that resonates with the Black Madonna. Some who were adopted into the Five Nations are reported to have said that "the moment the Hurons received the Faith and abandoned their dreams, their ruin began, and their whole Country has ever since been declining to its final destruction".[77] For Carpenter, one key moment in this ruin came when converts began disallowing "their dead to be disinterred and mingled with those of other Hurons during the Feast of the Dead".[78] This ritual traditionally increased the bonds between families, clans and the dead as a way of participating in the spiritual renewal of the creation.[79] Non-participation

solidified a division between living converts and traditional ancestors by, in Carpenter's words, "contemplating the separation of the natural and supernatural worlds".[80] The Wendat's spiritual and physical separation parallels the Black Robe focus on original sin and their view that "the encounter with North and South America" presaged a Biblical trajectory that "enabled the Gospel to be preached to all peoples of the world in all tongues and so heralded the coming of the Apocalypse".[81] Contrasting this final global apocalypse was a regional experience of conversion that saw the Wendat renewal become the Christian revelation "of the destroyed world".[82] From this point on it would be difficult for this Great Lake region of Gaia to tell stories with the historical depth of Wendat ancestors, for the Black Robes had worked hard at clearing the forest of this spiritual ecology. Fortunately for my *translatio* of the hermetic tradition, there is another group of French arrivals who made contact in a way that contrasts this colonial sorcery. This alternative approach resonates with Wendat renewal beliefs and the Blue Virgin's *viriditas*, and will thus guide my climate of unknowing into contact with the emanating glacial wisdom of *Kwäday Dän Ts'inchi*.

Ka-na-ta's Forested River-Roads

During Cartier's first trip across the Atlantic he traveled down the St. Lawrence River and met a group of Iroquois where the reference to *ka-na-ta*, village, was interpreted as the land's name.[83] A year later on his second of three voyages Cartier would traverse further down the St. Lawrence to the Iroquois settlement of *Hochelaga* on present-day Montreal Island. Cartier and his crew would spend the winter west of this destination, with the cold and scurvy killing about twenty-five by February. A crewman recorded the now familiar French response: "an image of the Virgin Mary" was "placed against a tree about a bow-shot distant from our fort across the snow and ice" and Cartier then ordered all to "go in procession".[84] Colonization of this cold land would not begin until the early-1600s under the lead of Samuel de Champlain. His home-base of Québec would be near where Cartier encountered the Iroquois

village of *Stadaconé*, a village like *Hochelaga* that was now long deserted. Early on he decided to deepen the French relation with the Native nations by sending out cultural interpreters. In 1610 the first of these interpreters, an 18 year old Etienne Brûlé, was sent out under the care of Wendat and Algonquin. By the time of his return one year later he had taken up many Native ways,[85] including the all important canoe for traveling Ka-na-ta's glacial inheritance.

After Lake Agassiz and the Champlain Sea released their burgeoning waters Ka-na-ta was transformed into something reminiscent of its current manifestation - a land that has "more inland fresh water than any other country in the world".[86] The glacial rivers and lakes combined with Native knowledge of the canoe to allow the French to travel from Quebec to the Mississippi River, the Hudson Bay and the Rockies.[87] As Maclennan notes, Ka-na-ta "is one of the few countries which did not depend for its early development on the horse", for the birch-bark canoe could take Native people and subsequent colonists "wherever there was a foot of water" while also being light enough to portage short distances.[88] The canoe became central to an interpreter way that traversed Ka-na-ta's waterways, with it being Jean Nicolet's canoe that transported the Black Robes to Wendat land in 1635. Nicolet's short interpreter story offers an introductory step into the *translatio* of my climate of unknowing as it follows the French who, in contrast to the Black Robes, came to embrace many Native ways and forested river-roads.

Born in Cherbourg, Normandy, Nicolet reached Quebec via the St. Lawrence River Road in 1618 at the age of 20. His quick ear for languages resulted in Champlain employing him as a cultural interpreter among an Algonquin group on the Rivière des Outaouais for eight years.[89] After becoming a highly respected cultural liaison with the Algonquins, Nicolet was asked in 1635 to improve relations between the Wendat and the Winnebagoes. With the Fathers Brébeuf and Daniel delivered to Huronia, he and a Wendat delegation continued their canoe pilgrimage to Winnebagoe territory near the present-day State of Wisconsin. Before

making their final approach Nicolet adorned himself with a "grand robe" that the *Jesuit Relations* states was made from "Chinese damask, all strewn with flowers and birds of many colors".[90] As he approached the people in this diplomatic attire, Nicolet discharged pistols from his right and left hands. Lavender speculates that this display makes it clear that both Champlain and Nicolet were confident that beyond the Wendat was the Orient, and as such Nicolet "wanted to be dressed not as an Indian or even a Frenchman, but as a proper Chinese dignitary".[91] Seeking out a Northwest Passage to the East was a primary goal of many educated French explorers, like Champlain, who were influenced by Dionysius' celestial hierarchy.[92] Interest in the Orient was related to both the economic riches of trade and the Renaissance hermetic equating of an original wisdom with antique civilizations from the Far East. When Nicolet realized that this goal was not met he settled for asking questions concerning a great sea. They affirmed that a great body of water was close, but it was the Mississippi River and not the fabled Northwest Passage.[93] Despite this failure, the diplomatic journey was itself a success as it secured more trade for the French by negotiating a peace treaty that allowed the Wendat to further their role as trading middle-men. This would prove to be the last notable success of Nicolet who, on October 27, 1642, drowned in the St. Lawrence River near the town of Quebec and ancestrally joined *Kwäday Dän Ts'inchi* in Ka-na-ta's glacial waters.

While cultural interpreters like Nicolet and Brûlé were largely uneducated with regards to scholasticism or hermeticism, they are symbolically connected to my climate of unknowing by the hermetic interest in a Greek *mêtis* that was central to the Native ways they engaged. *Mêtis* was understood as a hunting knowledge that could join together "skill, experience, subtle wit, and quick judgment... in transient, shifting, and ambiguous situations that did not lend themselves to precise measurement or rigorous logic".[94] In the sixteenth century some hermeticists recognized the limits of natural knowledge that came out of books originating from beyond the natural realities of Western Europe. As with the interpreter's engagement of

Native ways, hermeticists responded to this gap by venturing into a European land populated with the Celtic and Norman pagan traditions of healers and magicians so as to learn this traditional knowledge about Gaia.[95] Paracelsus, who died seven years after Cartier's inaugural ka-na-ta voyage, suggested learning from magicians and peasant elders "since these people have more understanding of such things than all the high colleges".[96] In his view, hermetic knowledge was "not all confined within one man's country", but is "distributed over the whole world, and thus "must be gathered together, sought out, and taken where they happen to be".[97] His student, Peter Severinus, continued to advise naturalists that the only way to arrive at this knowledge was to "sell your lands, burn up your books, buy yourself stout shoes, travel to the mountains, search the valleys, the deserts, the shores of the sea, and the deepest depressions of the earth", and "study the astronomy and terrestrial philosophy of the peasantry".[98] For Paracelsus and his student bringing together local natural and spiritual knowledges with scholastic science and Christian theology offered more effective understandings and applications since they reflected regional origins. While Eamon writes that studying "the astronomy and terrestrial philosophy of the peasantry" must have sent up howls of laughter from the academic establishment",[99] it offered Paracelsus a hermetic method for engaging pagan views of the One's emanations throughout Gaia's diverse regional manifestations.

By the time of Nicolet's death, Paracelsus' hermetic tradition was well into its Western European twilight, but the spirit of its interest in *mêtis* was about to be lived by French descendents of the interpreters in Ka-na-ta's land of glacial waters. With the destruction of the Wendat came an opportunity at mid-century for individuals of Brûlé and Nicolet's talents at learning Native Canadian *mêtis* to apply themselves to trade rather than the diplomacy of cultural interpreters. While Severinus put on stout shoes to search the wild for pagan knowledge that could resonate with scholastic knowledge and Neoplatonic Christianity, the evolving *coureur de bois* were largely peasants on a cliff edge between paganism and Christianity with little scholastic or hermetic knowledge. These French colonists often came

from western parts of France, such as Nicolet's Normandy or Celtic Brittany. Immigration rates to the colony were low, with today's six million French Canadiens tracing their ancestry to about "10,000 original immigrants".[100] Considering why so few came to the colony over the century and a half of French rule, Greer explains that the vision from France painted a place that was "at the end of the world", had severe winters and produced Jesuit martyrs at the hands of Iroquois *sauvages*.[101] To highlight the dominant non-paradisiacal view, Greer relates the story of a group "of would-be colonists" who when "passing through a small town in Normandy once provoked a riot on the part of townspeople who, refusing to believe the travelers were leaving France voluntarily, insisted on 'rescuing' them from the colonial exile awaiting them".[102] Against these internal cultural pressures pushed a growing French population, increasing material poverty and the negative seventeenth century effects of the *Little Ice Age*. Many of the usually male and unattached colonists were on the brink of indigence.[103] In contrast to the negative visions of Ka-na-ta, colonists like Nicolet and the later *coureur de bois* would find a land that was less dangerous than imagined, and had a slightly better economic standard of living.[104] Clarifying the significant difference in subsistence between the peasant experience of the two lands, Greer explains that colonists "were usually able to survive agricultural emergencies by turning to fish, wild fruits, and other products of nature that would not have been available in significant quantities in the overcrowded French countryside".[105]

These colonists approached Ka-na-ta's ecological *viriditas* with a Christian worldview that Peter Moogk explains is hard to imagine because of powerful modern ideas.[106] While today it is often assumed that nature is knowable and controllable, peasant Christians of a pagan persuasion often viewed Nature as "a dangerous place ruled by a God whose wrath or mercy was unpredictable".[107] As with the Wendat, many of the arriving French Canadiens saw supernatural forces underlying natural events, and attributed human misfortunes to sorcery or demons.[108] Both the missionaries and the later arriving anthropologists would note similarities

between Europe's pagan and Native America's indigenous beliefs concerning "other-world contacts, spirit-helpers, the ability to talk with animals, shape-shifting and ecstasies".[109] These co-existing Western European and Native American pagan beliefs remained a primary concern of Christians in the Black Robe spirit who wanted to de-forest the voices of wild Gaia in this once glaciated land. Though similar beliefs existed between Natives and the French Christians, it is also clear that the Canadiens had distinct spiritual symbols that gave them a different vision and approach of this land than that of Native inhabitants like the Wendat.

The Virgin Mary and her mother St. Anne would be asked for help over and over again in Ka-na-ta, with their names coming to mark its female inhabitants - like the founder of *les Soeurs Grises* - settlements and the experience of places. After repelling British attacks in 1690 and 1711, Quebec named its chapel Notre-Dame des Victoires to commemorate the Virgin's aid,[110] an ancient tradition in the same spirit as Chartres and the Virgin's tunic repelling of Normans. Of a different kind of experience, one woman related her fear-inspired vision of Mary's watery spirit when being transported by *coureur de bois* over a river's rapids: "I saw nothing but a noble Lady in white who hovered over the canoes and showed us the way!"[111] Experiences like these led the Virgin Mary to take on the consoling title of Notre Dame du Portage for the *coureur de bois*.[112]

Resonating with the inspiring power of Notre Dame de Chartres, many of the *coureur de bois* based themselves in a town that was at first dedicated to the Virgin Mary. On May 8, 1642 a group of pioneers sailed to where Cartier first met the Iroquois at Hochelaga with the mission of building the new town of Ville-Marie. The town was originally designed as a place for furthering the Black Robe Catholic mission of converting the "Amerindians in what was then the remote hinterland".[113] Situated at the confluence of the Outaouais and St. Lawrence Rivers, this island was seen as optimal for contacting and deforesting many Native nations.[114] Paralleling this mission was a *coureur de bois* response to the Wendat's destruction which resulted in the French losing access to inland trade. While most French inhabitants were

largely familiar with Natives from local Christian reserves, the *coureur de bois* from Ville Marie engaged trading relations with "the distant nations of the 'pays d'en haut,' the vast inland territories claimed by the King of France but never effectively occupied by his subjects".[115] Looking at the peasant life of seventeenth century France from which these *coureur de bois* came, Miller explains that freedom in the home country "was a function of the inability of the powerful to exert coercive power effectively".[116] Suddenly the individual experience of this cultural constriction opened out on the *pays d'en haut* north and west of the St. Lawrence Valley. Freedom "from social constraints and the routine of sedentary life" was at their doorstep, for beyond Ville-Marie "were the lands of adventure, of the free life, and of quick and abundant profits" based upon "virgin areas of a kind not glimpsed in Western Europe since the clearing of the great forests in the Middle Ages".[117] It did not take long for the well situated Ville-Marie to be transformed from an intended "holy city of the Virgin Mary" to a "little Babylon", a fur-trading center "notorious for disorder and drunkenness".[118] In 1705, Ville-Marie was renamed Montreal.

While Black Robes were attempting to externalize their ascetic mission onto Natives, many French appeared to be going Native due to a combination of colonial policy and the practical lure of life in the *pays d'en haut*. In contrast to the policies of other colonial powers, France "sought to assimilate Amerindians" through racial intermixing.[119] After the still "all-too-vivid memories of the demographic disaster of the Black Death", France perceived its power to be directly related to "the size of its population".[120] Consequently, they promoted cross-cultural marriages which it was thought would make more Natives French. It was shocking to those in positions of power that the exact opposite seemed to be happening as French Catholics "became Savage simply because they lived with them".[121] Responding to these negative effects of French policy, the Governor-General in 1685 wrote: "I could not express sufficiently to you... the attraction that this savage life of doing nothing, of being constrained by nothing, of following every whim, and being beyond correction has for the

young men".[122] The *coureur de bois* in particular appeared to be descending into a Wild Man way that may have been practical for living in Ka-na-ta, but was, according to the Jesuits, irreconcilable with a nation under the Catholic faith.[123] Offering a window on this *coureur de bois'* life which intimated a Wild Man descent is Adrienne Leduc's fictionalized genealogy of the first French Norman ancestor of the Leduc family-name to arrive in Ka-na-ta.[124]

In 1656 the 13-year old Antoine Leduc arrived in New France and began his journey towards being an early *coureur de bois*. Writing Antoine's story in a way that rings true with historical research, she offers an early view on this boy as he vows to become comfortable in this "strange world" by learning as much as possible about living in this place by engaging Algonquin and Wendat friends from around the town of Quebec. Later while watching a Native ritual that scatters tobacco to the spirit of a river, he ruminates over the Normandy Christian ritual where Saint-Médard is "carried in procession to ask for rain and then dipped in the holy-water vessel to make quite clear to the Saint what was expected".[125] These fictional devices provide insight into cultural and ecological forces that may have influenced the majority of Celt and Norman *coureur de bois* to align themselves with Native customs, take on female companions, adopt "items of native dress, accustom themselves to use canoes and snowshoes, hunt alongside Indian men, and join them in their ritual steam baths".[126] Amongst these adaptations, "the apparent egalitarianism practiced in the Indian tribes" was both particularly appealing and "most dangerous" because it was "most threatening to Western social thinking".[127] Over a century and a half after Antoine Leduc's reported 1687 watery death in the French River's glacial waters west of the Rivière des Outaouais the *coureur de bois* took this egalitarian value which contrasted the Wendat observation of Black Robe selfishness further westward into the *pays d'en haut* and adapted it to the land.

Though *coureur de bois* trade was useful to French political economic powers, these Canadiens were largely regarded "as dangerous renegades" by Jesuits.[128] Contrasting the French Crown policy of assimilation was a Jesuit approach concerned with the potential

sauvage descent of impressionable French citizens. Beginning with their arrival in 1625, the Jesuits worked towards barring interpreters "from living among the people they were trying to convert" because of a perceived lax Catholicism that leaned towards paganism.[129] This view remained the norm, with the Christian regression of the *coureur de bois* receiving this early-eighteenth century critique from Jesuit Father Charlevoix:

> I could not, Monseigneur, adequately express to you the attraction which the young men feel to this savage way of life which consists of doing nothing, in being restrained by nothing, in pursuing all one's urges, and placing oneself beyond the possibility of correction.[130]

Greer explains that Father Charlevoix was expressing the fear that the proximity of religiously naïve Frenchmen to *sauvages* and the wilderness "was a dangerous contagion, always threatening to undermine the health of civilization".[131] These actions could undermine the Black Robe sorcery which intended to deforest Ka-na-ta's pagan world in preparation for apocalypse. Despite these political and religious concerns, the *coureur de bois* and the French Canadien population in general came to reflect a hybrid of cultures. In the 1750s a Swedish naturalist by the name of Peter Kalm found it odd that while it is true "many nations imitate the French customs, I observed, on the contrary, that the French in Canada in many respects follow the customs of the Indians, with whom they have constant relations":

> They use the tobacco pipes, shoes, garters, and belts of the Indians. They follow the Indian way of waging war exactly; they mix the same things with tobacco; they make use of the Indian bark boats and row them in the Indian way; they wrap a square piece of cloth round their feet, instead of stockings, and have adopted many other Indian fashions.[132]

The relations ran even deeper, for some scholars estimate "that forty percent of French Canadians could find at least one Amerindian in their family trees".[133]

These relations also went beyond genealogy into culture formation, for the *coureur de bois* and their Native partners brought forth children that, with the right environmental conditions, became the evolving culture known in today's Canada as the Métis. While Métis who stayed close to the St. Lawrence Valley never had space away from colonial powers and population expansion to get a sense of their own cultural identity, the same was not true for Métis who went deep into the *pays d'en haut.*[134] By the early-nineteenth century, the Métis lifestyle was primarily oriented around the summer and fall hunts of bison on the plains and fur trade with the North West Company.[135] In between these hunts, they largely settled around the Red River in Manitoba, where Lake Agassiz once sat, and dedicated most of their time to the wild descent of hunting and gathering rather than agriculture.[136] When other largely British Empire colonists began arriving in the early 1800s, the cultural contrast made it apparent to the Métis that "they were a distinct people with a way of life that was worth defending".[137] Geographic habitation, unique linguistics, egalitarian economic ways and syncretic religious view interacted "to shape and maintain this collective consciousness".[138] This Métis culture symbolically extends my *translatio* of the hermetic *mêtis* to a time when the *Little Ice Age* was on the verge of an industrial recession of glaciers just as the nineteenth century British colonial power was about to more fully institute the Jesuit's deforestation of Canada's pagan land.

Fast on the heels of Canadian Confederation in 1867 was the British Parliament's Rupert's Land Act which transferred ownership from the Hudson Bay Company to the new Empire Loyalist nation all the land previously associated with the *pays d'en haut.* Motivated by the expansionary movements of the United States to the south, the Canadian government worked on expanding the colony westward to the Pacific and northward into the Arctic. The result was increasingly coercive policies towards many Native nations, including the Métis. Despite negotiations, this encroachment led to the unsuccessful colonial resistances of the Métis Red River and North-West Rebellions which signaled a steady Canadian disruption of these cultural ways. By the late-nineteenth century the Canadian government was instituting

agricultural programs in the west that were meant to speed up "the slow pace of Indians' 'civilization' and 'assimilation'".[139] The Black Robe mission that began with the Wendat was finally being extended to even those French who went *sauvage*, though by this time the mission's underlying motive had exchanged the French Catholic deforestation for the secular industrial progress of British loyalists. The year 1885 saw railways to the Pacific completely displace the forested river-roads that had given the Métis their originating identity. Though the Wendat, *coureur de bois* and Métis did not participate directly in the building of this world, their trading relations were integral in facilitating the industrial expansion of this changing Western vision. Contrasting their integral role in past incarnations of Canada's intercultural networks, Natives were now largely characterized as limiting development while being denigrated as backward savages. The Métis were regarded as a half-breed, neither Native nor European. With the *Little Ice Age* over and the industrial global warming beginning to leave its impression on Canada's forests, rivers, lakes and melting glaciers, it would only be a matter of decades before *Kwäday Dän Ts'inchi* inspired a melting of colonial *mêtis* stories that free ancestors like Nicolet and Leduc from their deep freeze in once glaciated waters - Long Ago Men Found. In fact, today's post-colonial industrial warming again makes apparent to my climatic thinking the value of the *mêtis* of Native people like Métis, Wendat, Tlingit and Inuit. *Kwäday Dän Ts'inchi's* ancestral melting of these Canadian-Native stories guides this *translatio* of my climate of unknowing beyond the Western Enlightenment so that I can contemplate both Native *mêtis* and climatic thinking on Canada's glacial changes. This forested river-road now returns me to La Pérouse's colonial contact with the Tlingit as a first step in this unknowing of the climatic theophany's ancestral and glacial emanations.

Canadien Enlightenmêtis

When La Pérouse's late-eighteenth century French expedition arrived on the northwest coast it was not simply the glaciers of St. Elias that struck fear into him. Cruikshank relates

that he found the country to be frightful in comparison to "our cultivated plains", adding that the Tlingit are "rude and barbarous, their soil is wild and rugged, they inhabit the country only to extirpate every thing that lives and moves upon it".[140] Informing his words is an enlightened colonial science that assumes nature has the power of "determining what culture is destined to become".[141] Implied in La Pérouse's thought was the notion that the Tlingit could be civilized through an agricultural transformation of the land. While this Enlightenment view that agricultural development could improve the local weather and progress civilization was extended in the thought of Du Bos, Montesquieu and Hume,[142] these ideas were also grounded in New France's earlier Black Robe sorcery. The globalizing intent behind these Western colonial contacts would become more apparent to Tlingit in a twentieth century that began with their land around the St. Elias mountain range becoming the focus of British colonial nation building. Negotiations between the United States and the British, who still represented Canada internationally, resulted in their northern part of British Columbia being split from the Pacific Ocean by an agreement which left the "bitter impression that Canada's national interests had been sacrificed to Anglo-American harmony".[143] Significantly absent in the negotiations were Tlingit who, according to Cruikshank, were "naturalized as part of the landscape" that was scientifically surveyed for a "civilizing mission".[144] This political economic use of science on Tlingit land was simply the latest colonial permutation of La Pérouse's agricultural determinism, the Black Robe pagan deforestations and a Western climatic sorcery that builds on a 8,000 year human tradition. The industrial melting of *Kwäday Dän Ts'ínchi*, the Wendat, Nicolet and Leduc reveals to me stories that confront this silencing methodology with a twenty-first century climatic thinking that is increasingly appreciative of Native *mêtis* like that of Inuit and Tlingit.

It is a curious paradox that science's participation in the political economic marginalization of Native knowledge has been based in a methodology that partially began with a natural philosopher's enlightened transformation of the hermeticist's *mêtis*. Francis

Bacon came to propose a scientific method which, Eamon argues, followed the myths of Pan's hunting sagacity to "proceed from one experiment to another" just as "a hunter tracks his prey deliberately, step by step, guided by footprints and signs".[145] While a hunter's *mêtis* used dreams, intuition and ritual to direct knowledge of Gaia that went "beyond the reach of ordinary sense perception", the scientist was described by Bacon as one who systematically interrogated and experimented "to penetrate nature's interior" and understand that which is deceptive to the senses.[146] Contrasting the Black Robes who used colonial sorcery to prepare land and people for God, an enlightened science now offered to political economic interests the potential penetration and control of nature for human benefit and profit. This progressing scientific methodology led some to focus their controlling gaze on the numinous power of glaciers.

After La Pérouse's 1788 watery death in the South Pacific, the scientific impetus to increase glacial knowledge was acted upon by the nineteenth century Swiss geologist Louis Agassiz. Disagreeing with the dominant early-nineteenth century geological belief that patterns of rock and debris on the Eurasian and North American continents were dispersed by the Old Testament flood, Agassiz offered another view that accorded more seamlessly with the accumulating data.[147] In 1843 he published *Studies on Glaciers*, within which he compares the common patterns and grooves that occur both close by and far away from glaciers. Based on this evidence, he concluded that "the Earth was covered by a huge ice sheet" which at one time "extended beyond the shorelines of the Mediterranean and of the Atlantic Ocean, and even completely covered North America and Asiatic Russia".[148] Scientific research into the twentieth century would come to support the basic thrust of his theory that my *translatio* depicts in the following way: Gaia has regular periods of glacial recessions and expansions that respond to the climatic theophany's emanating orbital and CO_2 cycles. The influence of Agassiz on this glacial science is epitomized in the Canadian post-Ice Age legend of Lake Agassiz which reveals the potential of a THC reversal that is interconnected with his projected

glacial oscillations. Today's further industrial-inspired recession of Canadian glaciers melts *Kwäday Dän Ts'ínchi* into communion with Wendat, Nicolet and Leduc to ancestrally guide my climate of unknowing to contemplate developments which have increased humanity's power to dialogue with the ocean-glacial emanations of the theophany.

Ruddiman proposes that around the time of Lake Agassiz's second disturbance of the Atlantic THC, humanity's civilizing revolution in the Middle East and China began to actively interact with the climatic theophany's glaciers.[149] His research suggests that most of the aberrant changes in CO_2 and methane levels that appear between 8,000 and 5,000 years ago can be accounted for by the spread of civilizing deforestations related to agriculture and population growth. These increasing GHG levels have pushed against an eight percent decrease in high latitude summer solar radiation over the past 11,000 years related to orbital shifts. The result has been that "polar climates did cool during the last 5,000 years because of the solar radiation changes, but ice sheets failed to form because of the human additions of greenhouse gases".[150] Extending his analysis through a computer climate model that removes the agricultural and industrial GHG increases, Ruddiman finds that Gaia should now be involved in a "long-term cooling trend" that would eventually turn Scandinavia and Canada into the glaciated existence of present-day Antarctica or Greenland.[151] In projecting the progression of ice sheets from Baffin Island to the Labrador Peninsula, the model roughly follows past trends in reverse to suggest "that an ice sheet of some size should now exist in northeastern Canada".[152] The reason this is not the case is because "humans had begun adding greenhouse gases to the atmosphere in amounts sufficient to keep climate warm enough to avoid glaciation".[153] In a paradoxical turn of events, his hypothesis suddenly supports the Black Robe, Enlightenment and Canadian colonial belief that agricultural and industrial deforestations can change land and climate - though its long-term material benefits for humanity are today called into question by a global apocalyptic potential.

Contrasting these projections that remove 8,000 years of human GHG emissions, climate models based on a progression of current emissions have found that with enough time "the Greenland glaciers and a substantial part of the Antarctica ice sheet" could "completely melt", resulting in the serious repercussions of sea level rises and coastal flooding in urban centers, unpredictable weather that will disrupt agriculture, increasing "frequency and intensity of hurricanes" in the south of North America related to warming ocean waters and the possibility of a catastrophic THC reversal.[154] The apocalyptic legend of Lake Agassiz' lengthy destabilization of the Atlantic reveals the threat of a THC reversal whose length is quite uncertain because of a Western climatic sorcery that is unpredictably interacting with the now cooling emanations of the shifting orbital cycles. Because of the apocalyptic potential of melting glaciers, climate scientists have flocked to northern and alpine areas and found something that would truly surprise La Pérouse, other Enlightenment thinkers, British and French colonial powers, and the Black Robes. Researchers have found that the traditional ecological knowledge of Native *mêtis* resonates with their own paleoclimate histories, natural observations and computer models.[155] As Cruikshank states, "orally transmitted genealogies, scientific research, and archival accounts support one another".[156] While *Kwäday Dän Ts'ínchi* offers scientific knowledge about past cultural and natural changes related to glacial cycles, this ancestor also works with Tlingit to reinvigorate "longstanding oral histories about travel and trade near the Saint Elias Mountains" which precedes the colonial industrial warming.[157]

Cruikshank proposes that Tlingit traditional stories reveal glacial ecologies as "wildly inconstant places" that present "navigational, spiritual, and intellectual challenges of a sentient land that listens", where people "can actually learn more about themselves and their world than might be possible in everyday life".[158] New Tlingit stories tell of *Kwäday Dän Ts'ínchi's* "appearance, his contribution to science, his ceremonial cremation, and his return to the glacier", and thus he also speaks to respectful practices which are crucial for maintaining "balance in a moral world".[159] His ancestral signification of glacial changes offers Tlingit a

natural scaffolding "for close empirical observation and interpretation of the dangers of hubris in a complex and unpredictable world".[160] Stories of their "unexpected advances, catastrophic outbursts, looming crevasses, and colourless whiteness" reveal "a physical presence that transforms the earth" and people through an "imaginative force" that interconnects the present with the past.[161] This wisdom of *Kwäday Dän Ts'ínchi* suggests that today's shifting glacial emanations are responding to a climatic sorcery interconnected to the West's colonial integration of political economic, scientific and Christian power. As unlikely as this proposal is to a deforested Western thought which separates rational culture from religion and Gaia, this melting ancestral wisdom is supported by a Canadian history of colonial and industrial deforestations that resonates with my climatic thinking on the West's indeterminate uncertainty. Since *Kwäday Dän Ts'ínchi's* glacial accretion the Wendat were reduced from a great culture to remnants within other nations, the Métis culture was both born and swallowed up by Canada's national progress and the *Little Ice Age* gave way to an industrial warming that released the ancestral guidance of this Tlingit ancestor, the Wendat culture, Nicolet and Leduc. Through the wisdom of this hermetic act I can paddle down Canada's once glaciated river-roads to an *Enlightenmêtis* that interrelates climatic thinking and IQ in a climate of unknowing. The focus of this practice is that Western sorcery which manifests Gaia's responsive regional and global emanations in Canada's north and in my twenty-first century Toronto experience.

12 Sharing My Passage de Toronto's Climate of Unknowing (Present)

ᐊᒥᖅᑲᖅᓂᖅ ᐸᓂᓴ ᑎ ᑐᖏᓐᑐᐸ ᓭᓪᐅᐸ ᖃᐅᔨᒪᓐᓇᓐᓂᓐᓚᓂᒃ

ᕼᐅᒥᑎᐅᐸ ᐃᓂᒪᖅᑭᓂᓐᒃ ᐃᓕᓐᓚᓐᓂᑦᑎᐊᓕᒪᓗᐸᓴᖅ ᐊᖏᖅᑭᓂᓂᒪᑦᑕᐅᑎᒥᔪᓂᒃ
Hermeticism has nothing to do with the desire to have
ᑭᐅᔭᔪᑎᑕᖅᓗᐊᖅᓴᖅᑐᑦᑎᓂᓕᒧᑦ ᑕᒪᐃᓐᓄᑦ ᐊᐱᖅᔪᑎᑦᓴᓄᑦ, ᐱᓕᐅᔪᓐᓇᖅᑐᓂᒃ
ready made answers to all questions, obtained with
ᐱᓇᓂᓗᐊᓐᓂᑲᖅᓄᓗᐊᖅᓗᓂ ᐊᓪᒪᒃ ᐊᓐᓂᓂᖅᐸᓐᒍᔪᓐᓗᑎᑦ. ᐊᐱᖅᔪᑎᑦᓴᓐᓂᑦ
minimum effort and maximum result. Its questions are
ᐃᓂᓪᒋᓪᓐᓇᖅᓴᑦ ᐊᓪᒪᒃ ᑭᐅᔭᔪᑎᑦ ᑐᓴᑭᒪᓕᖅᓂᑦ ᐃᓂᒪᖅᑭᓂᐅᐅᑦ ᐱᑎᐊᖅᓂᒪᔪᑦ
crises and the answers that it seeks are states of consciousness
ᑕᒪᖅᑯᓐᓇᓐᓇᑦ ᐃᓂᓪᒋᓪᓐᓇᖅᑐᓂᒃ.
resulting from these crises.

Anonymous 2002

ᑕᐃᒪᓕ ᐃᓄᐃᑦ ᓂᓐᑎᐅᓴᐅᓪᓕᐊᓂᒪᓕᖅᑎᓄᑦ, ᓇᔨᒃᖁᓐᓂᖅ,
Because a people coevolve with their habitat, because
ᐊᑐᖅᓂᒪᓕᖅᑎᓄᑦ ᓂᕆᓕᖅᑎ ᐊᑐᖅᓂᒪᒃᓴᓐᓂᓐᓂᖅ, ᐅᓂᖅᑲᖅᑐᐊᖅᓂᖅ
they walk the paths their ancestors walked, mythtelling
ᓇᓗᓐᓂᓂᖅᑕᓕᒻᒥᖅᓴᖅ ᑕᐃᓐᓇ ᐅᓂᖅᑲᖅ ᐱᑕᖅᓚᓓᐊᖅᓴᒪᓄᑦ
assumes that the stories already exist in nature, waiting
ᓄᓇᒥ, ᑐᖃᖅᑕᐅᑎᑐᐃᓐᓇᖅᑐᖅ ᐃᓄᐃᓄᑦ ᓇᓕᑐᓄᑦ.
to be overheard by humans who will listen for them.

Sean Kane 1998

ᐃᓐᓂᕐᕿᑎᓕᓗᑕ ᓂᖅᑐᑕ ᑐᖏᑐᒥ ᐃᑎᓄ ᐃᖅᓂᓗᐊᕐᐃᒃᑯᑦ ᐊᓪᒪ ᒋᓐ
As we travel at speed over Toronto's Gardiner Expressway
ᕐᓕ ᒋᖅᐳᐃᖅᑯᑦ, ᐃᖅᑲᐃᒪᒃᖃᖅᑐᑐᖅᓂᖅᓗᓕᒍᑦ ᐃᓐᓂᕐᕿᖃᓗᐊᖅᑲᑦᑕ
and the Don Valley Parkway, we are likely to forget that we
ᑕᐃᒪᓐᓇᑐᒃᓗᓂᑦ ᐊᖅᑯᑎᖅᓴᐱᒥᓐᓂᕐᑎᒍᑦ ᐊᓕᓕᐃᑦ.
are riding on the ancient road system of the Indians.

Eric Arthur 1986

Prologue to a Climatic Twelfth Story

In carrying this hermetic tradition beyond the Enlightenment and *Little Ice Age* into the twenty-first century's industrial warming, my polyphonic pilgrimage is confronted once again with the same two introductory questions that inspired these three acts: What is the West's climatic uncertainty?, and How do we respond to this uncertainty? My act of climatic thinking responded to the first question by defining the West's climatic uncertainty as a function of political economic double movements that displace an effective response to its cultural crisis. As 2007 approached some initial signs of the next chapter in these storied North American movements became apparent. On November 7, 2006 Bush's apocalyptic way received a significant liberal blow as the American populace gave House and Senate power to the Democrats. While the dominant factor in this change was the failed Iraq war, there were other interrelated issues highlighted by the new Speaker of the House, Nancy Pelosi, during her introductory House speech on January 4, 2007. Moving America beyond an Iraq civil war and dependence on Middle East oil requires, in her words, "A new America that declares our energy independence, promotes domestic sources of renewable energy, and combats climate change".[1] Pelosi ended her speech with a liberal statement that is central to this dialectical definition of the West's climatic uncertainty, "now lets make progress for the American people". On January 23, 2007 President Bush responded to the Democrats in a State of the Union address that was concerned with reducing dependence on foreign oil through a new energy policy. The White House reported that this new energy policy will also help America

"confront climate change by stopping the projected growth of carbon dioxide emissions from cars, light trucks and SUVs within 10 years".[2] It appears that the double movement continues in the United States' manifestation of the West's climatic uncertainty as Bush's way of apocalyptic denial gives way to a liberal faith in progress, development and sustainable development. In the northern portion of North America a similar defining dynamic of the West's climatic uncertainty became observable as Canada's Liberals revealed their new response to Harper's Conservative movement.

On December 2, 2006 Stéphane Dion was elected as leader of the Liberal Party in the same Montreal Conference Center where a year earlier, as Prime Minister Martin's Environmental Minister, he presided over the Montreal Conference on climate change for the outgoing Liberal government. In his Liberal leadership convention speech Dion offered to lead the Liberal Party and the Canadian population after his federal election with an alternative "Three Pillar Approach" that weaves "together, better than any other country in the world, economic prosperity, social justice and environmental sustainability".[3] Dion's approach was devised as a response to the challenge of climate change, the past Liberal failure and Conservative inaction, and his victory speech highlighted these points in a Liberal vision of sustainable development. The beginning of 2007 saw Prime Minister Harper responsively move to Dion's green liberalism with a strategic shuffling of his cabinet and a green-washing of his image. On January 4 Harper announced that his Conservative government has "clearly determined we need to do more on the environment", and that "when it comes to clean air and climate change, that Canadians deserve a lot more".[4] This change in attitude was supported by the replacement of his "environment minister, Rona Ambrose, who had become a symbol of Tory insensitivity to climate change" with the more politically experienced John Baird.[5] By the end of January the Conservatives had announced initiatives supporting renewable energy and the development of renewable technologies, some of which were initially developed by Martin's previous Liberal government. According to Rick Smith, Executive Director of

Environmental Defence, these Conservative and Liberal political changes were related to "a dramatic change in public attitudes on the environment that has in turn caused a totally different tune to be whistled by the federal parties".[6]

Canada's 2006 rising public concern about climate change coincided with Gore's popular elucidation of climate science in "An Inconvenient Truth" and what seemed like the media's subsequent increased representation of the human role in today's climatic changes. In February 2007 the scientific pressure for action increased with the IPCC's release of a Fourth Assessment Report (FAR) that added more definitive support on the human role in climate change, specifically stating that the 379 ppm "atmospheric concentration of carbon dioxide in 2005 exceeds by far the natural range over the last 650,000 years (180 to 300 ppm)", and that "Eleven of the last twelve years rank among the 12 warmest years in the instrumental record or global surface temperatures (since 1850)".[7] The FAR also projected that typhoons and hurricanes "will become more intense" and that the Atlantic circulation will continue to slow down, though it still thought to be highly unlikely that an abrupt change in the THC will occur before 2100.[8] It is important to remember that these IPCC findings, Gore's popular message and the subsequent media reports merely document strange phenomena which people are also experiencing to one degree or another in their everyday lives. Filling Canada's public consciousness for weeks as 2007 arrived was an unusual winter warmth in the east and freak storms in the west that raised concerns just as northern warming has for Inuit, increased hurricane frequency has for the southwest United States and a potential THC reversal has for Western Europe. These actual and projected experiences reveal Gaia's indeterminate triple moving potential to influence public concern, media reporting, scientific research and political policies. Perhaps these North American debates and movements are primarily related to Gaia's determination that the time for liberal failures and conservative denials is long past. The oddity of proposing Gaia's animated role in climate change highlighted for my climatic thinking the original scarcity which is the defining core of the West's doubly moving climatic uncertainty. It

is this original disconnection of divinity and Gaia in the Canadian, North American and Western ways of living - consumption, political economic policies, scientific research and religious belief - that needs to be addressed in answering my second introductory question concerning a climate change response.

Responding to the West's climatic uncertainty is an apocalyptic challenge that requires opening the constraining lens of original scarcity onto a view of today's industrial warming as evolving from humanity's biological and cultural grounding in Gaia's indeterminism. This IPCC science-inspired shift in view is more important to the development of a response than the continual increase of objective disciplinary data and model accuracy concerning complex ecological processes, for it clarifies that mitigation and adaptation initiatives must primarily reply to globalizing cultural assumptions which limit adaptability to an indeterminate ecological reality. To envision such a response my climatic thinking began by contextualizing the IPCC's interdisciplinarity within an Earth Charter intercultural etiquette for engaging IQ dialogues, and a quantum complementarity for hermetically blending religious contemplation and research - the climate of unknowing. While the second act's four Inuit stories suggest that the West's doubly moving colonial practices of appropriation and acculturation are interrelated to the dynamics of today's climatic changes in the north, my third act's hermetic stories extend the history of a physically observable civilizing influence on the climate into a 8,000 year old agricultural tradition. With this historical research the West's climatic uncertainty is seen to partake in older colonizing and civilizing patterns that further limits our present understanding and response. The Eriugena-inspired climate of unknowing offered me medieval wisdom for contemplating an alternative Western approach that brings interdisciplinary knowledge and intercultural *Enlightenmêtis* into a *via negativa* that resonates with Gaia's indeterminism. This hermetic response symbolically interconnects the West's climatic uncertainty with a lengthy human influence on the climatic theophany that is, in this final hermetic act, characterized as a tradition of CO_2 sorcery. The West's originally scarce political economic crisis displacement

and GHG consumer practices are today's sorcerous rituals for engaging a climatic theophany which emanates changes through Gaia's breath, Sila, Atlantic THC, glaciers, forests and Sedna animals. Western dreams of economic benefits related to these climatic changes reveal the sorcerous nature of political economic practices that have traditionally benefited from ecological and cultural disruptions, as highlighted in the Inuit, Wendat and pagan European experiences. Contextualizing this Western influence on the climatic theophany within broader historical patterns of colonialism, missionizing deforestation and civilizing agriculture ultimately reveals the inadequacy of simply blaming the antiquated leadership of former Prime Minister Martin, Prime Minister Harper or President Bush. Such acts of scapegoating simply displace a personal sense of each individual's participation in the lengthy civilizing tradition of today's apocalyptic CO_2 sorcery.

Though global, North American and Canadian political economic responses to today's indeterminate changes in Gaia are necessary, my acts of IQ dialogue and hermetic contemplation suggest that the cultural understandings and biological relationships which emerge within particular bioregions need to have more influence upon local and global responses if original scarcity is to be put in its place. For those of us who are deeply enmeshed in the West's originally scarce double movements, envisioning such a locally grounded Gaian response to CO_2 sorcery requires two important acts. First, I must recognize the tendrils of CO_2 sorcery in those fundamental practices of everyday living that depend upon GHG-emitting fossil fuels. Second, my participation in these cultural patterns needs to brought into a climate of unknowing which is ancestrally connected to the urbanized bioregion of Toronto I currently live within. It is these two acts which guide me to a mutually constituted and always incomplete definition of the West's climatic sorcery, as well as an ever-evolving answer to the second question concerning an adequate hermetic response. In the upcoming twelfth and final story, *Kwäday Dän Ts'ínchi* comes forth from the climatic theophany to guide my pilgrimage

to a hermetic *Enlightenmêtis* or climate of unknowing response to the West's popular urban participation in this lengthy tradition of CO_2 sorcery.

Chirping crickets, a whistling cardinal, distant vehicular rumbling, these and other emanating sounds continually reminded me that these hermetic contemplations were largely practiced within a High Park forest that is surrounded by Toronto's urban machinations. The constant automobile percussion impacts this park's changing seasonal voices through a speedy fragmentation of the ecology, and a hum which rises during barren times and recedes with a spring *viriditas* or darkening snow storm. A few streets east of the park, just past my residence on Indian Grove, is the former Native trail today known as Indian Road. Severing High Park from Lake Ontario to the south is the Lake Shore Road and Gardiner Expressway whose fast pace can, as Eric Arthur remarks, lead us "to forget that we are riding on the ancient 'road' system of the Indians, the *coureur de bois*, and the traders".[1] One kilometer to the west, on the Humber River, is a park dedicated to Etienne Brûlé's first Western visit in 1615 with twelve Wendat. The late-seventeenth century would bring an Iroquoian Seneca village, Teiaiagon, to this stretch of the river followed by Mississauga inhabitants.[2] Later colonial arrivals of French Canadiens would refer to this water-way as the *passage de Toronto* and subsequent Empire Loyalists as Toronto Carrying Place. For my twenty-first century climate of unknowing it is still an important intercultural river-road that bridges the West's hermetic past to my present contemplation in High Park. Its waters guide me to *Kwäday Dän Ts'ínchi's* wisdom of an *Enlightenmêtis* response to daily urban rituals which today manifest the climatic theophany's emanating changes throughout Gaia's many interacting regions, including Toronto's High Park.

The value of contemplating my urban involvement in fuelling today's changes was in the beginning highlighted by Evernden's proposal that environmental studies is concerned

with "the inseparability of self and circumstance".[3] Described as Gaia's climatic indeterminacy in the first act and Sila in the second, this inseparability calls my climatic thinking towards an environmental autobiography that inquires into how past human-nature relations unconsciously inform current beliefs and actions.[4] This environmental methodology resonates with Clark Blaise's definition of critical autobiography as "dialogue of the individual and all that makes him/her unique, with the vastness of time and space, all that makes him/her indistinguishable from anyone, indeed anything that has ever existed".[5] Providing more hermetic definition to this passage is James Hillman's Platonic-inspired "myth of growing down" which outlines four paths to critical autobiography.[6] While his most immediate way entails "growing down" into your own unique body, this autobiography is genealogically grounded by a second path of recognizing yourself as "one among your people and a member of the family tree, including its twisted rotten branches".[7] Encompassing environmental genealogy is a third way of uncovering one's familial embedding in a place and culture "that ties you down with duties and customs".[8] Finally, this interaction between body, family and cultural ecology manifests unique temporal circumstances in the present that require personal responses "by means of gestures that declare your full attachment to this world".[9] My most immediate circumstances that call for these gestures is based upon living within Toronto's urban CO_2 sorcery which dawned in the late-eighteenth century colonial period.

The first permanent colonial structure in this Mississauga territory on Lake Ontario, near where Fort York would eventually be built, was a 1749 French trading post named Fort Rouillé, and its first permanent resident was the French trader and Native language interpreter Jean-Baptiste Rousseau.[10] After the British defeat of the French and the American Revolution which sent Empire Loyalists north in the latter decades of the eighteenth century, the area that would become Toronto was negotiated from the Mississauga by the British Deputy Surveyor General John Collins with the help of French Canadien interpreters on September 23, 1787. Meeting at the Carrying Place on the Bay of Quinte with three Mississauga Chiefs, Collins

initially negotiated for the imprecisely defined land in exchange for £1700 worth of kettles, mirrors, guns, tobacco and rum.[11] A more thorough negotiation with eight Mississauga Chiefs occurred in 1805 to create the Credit River agreement. Between these two intercultural negotiations, in July 1793, Lieutenant Colonel Simcoe and his Queen's Rangers were navigated into the area by Rousseau so as to create a settlement that would utilize "the *passage de Toronto* from the Humber mouth to Lake Huron" for bypassing the American revolutionary pressure at Detroit.[12] This shoreline was perceived by Simcoe as an ideal place for retaining British control of the fur trade by having Natives "bring their furs to those who might settle in his new province, rather than to the agents of merchants in distant Montreal".[13] The land which would become Toronto was at this time forested by hardwood, poplar, evergreen, cedars, and pine, and through it "ran a network of streams that are now submerged in the sewer system".[14] Keeping company with the beavers that inhabited the marsh-filled land were several well-worn portage and forest trails, two Mississauga families and Rousseau.[15] While one new arrival romantically described the forests of Toronto Carrying Place as "a perpetual gloom of vaulted boughs and intermingled shade, a solemn twilight monotony", the fluctuation between icy winter and hot humid summer led a British sentry to declare "that only a strip of paper separated the land from the fires of damnation".[16] As Simcoe explored the Humber in a swampland near the lake that presently bears his name, he met an Ojibwa man who informed him of a winding path whose alternative passage would become Yonge Street. Stories of these colonial intercultural relations surround the *passage de Toronto* with a knowledgeable ancestral Native presence that at this not too-distant time could support or contest Toronto's urban development.

Simcoe's provincial capital had a reputed isolation that was "palpable, and daunting to the settlers",[17] resulting in the slow early development of the town. In 1810 it had the relatively small population of 600 settlers, mostly government and military personnel. Colonial Toronto's reputation began changing with the mid-nineteenth century Industrial Revolution as

it transformed into a British Canadian symbol of urban power that quickened the traditional sorcery of climatic deforestation. During this time of urban expansion, railroads and factories, Native cultures were marginalized into the backdrop of Ontario just "as 80 percent of southern Ontario's original forest cover" was removed.[18] Industrial Toronto epitomized this deforesting growth as it swallowed up old colonial villages, such as Windermere between present-day High Park and the Humber River. By 1911 "a majority of Ontarians would live in cities", and in "1931, 61 percent of Ontario's population was urban".[19] This trend continues in the twenty-first century as approximately 80 percent of Canadians live in cities,[20] with the five million in Toronto's surrounding area being the nation's largest. The 1970s saw Toronto eclipse Montreal as the nation's dominant urban economic engine, and by 2000 almost half of the nation's millionaires lived in the city. In two centuries Simcoe's urban vision has managed to deforest the land and become a significant industrial participant in a climatic sorcery that continues to bring great changes both far away and close-by.

Canada's urban growth has been paralleled by a six-fold increase in personal vehicles between 1945 and 1975, as well as an additional "40,000 kilometres of highways and roads in a system centring on the Toronto region".[21] Highlighting the climatic impact of these automotive practices, Peter Tertzakian explains that on average "only 17 percent of the energy in a barrel of oil typically makes it to the rubber on the road".[22] This low fuel efficiency is improved in city driving by about "5.6 miles per gallon for every 1,000 pounds of weight reduction on 2005 model vehicles".[23] Shifting to smaller cars could increase fuel economy by 50 percent, and even if vehicles only improved "to 22 percent, a mere five-point gain, it would cut fuel consumption by 20 percent".[24] In the United States this amounts to a reduction of "just over eight million gallons per day".[25] While reducing speed could further a response, Tertzakian proposes that the last thing North Americans want to do is increase commute times, exchange the comfort of private vehicles for more efficient public transit or reduce the size of houses that need heating and cooling. In his view, "the level of affluence is such that it's going

to take much higher prices before many people change their ways".[26] The popular hold that this display of affluence has upon people is symbolized in the prevalence of SUVs traveling the roadways over Toronto's ancestral passages.

Based on an analysis of the advertisements which help to popularize SUVs, Richard Olsen, Jr. proposes they sell a liminal fantasy of exploration that transports people "from suburbia to wilderness" and "from 'city worker' to 'nature woman'".[27] This transformative escape into the wilderness "taps into long-standing connections between the desert and purification" that have some now familiar Christian overtones, such that "spiritual epiphanies" await those who engage the self-denial offered by the SUV off-road transportability.[28] Advertisers suggest that purchasing a SUV "will resolve the ongoing and inherent dialectical tensions of man's relationship with his environment".[29] Such an assertion is problematic for Olsen first because the "dialectical tensions" of human-nature relations can be "managed, not resolved", and second because this consumerism reinforces the excessively disruptive transformation of nature into economic resources.[30] SUV popularity symbolizes the public excesses of a Western sorcery which unsustainably emits GHGs that call forward the climatic theophany's changing emanations on global, continental and local scales - such as those experienced by Inuit in the north.

In Toronto's southern Ontario region there has been a rise in mean temperature of "about 0.6°C" over the past few decades, and this change is projected to increase "another 2-3°C by 2050".[31] Evidence of this warming trend is observed in Environment Canada's report that sixteen of this region's hottest summers have occurred over the past eighteen years.[32] The symbolic SUV connection to this warming is reflected in Toronto's 2005 record of 57 smog alerts, which eclipsed the 2004 high of 34. With the heat and pollution-heavy air come health issues related to heat stress, increases in respiratory problems[33] and record energy usage as people cool off with air conditioning. This urban situation is worsened by a summer heat island that daily stores the Sun's energy and warming air in the concrete and asphalt surfaces.

Michael Hough explains that at night urban surfaces "begin to radiate heat stored during the day", but a stratification of cool air at the rooftop level inhibits "warmer air between buildings from moving upwards".[34] As rural areas "cool rapidly at night, due to light winds and unobstructed radiation", the heat island warms 4 to 5°C by dawn at summer's peak.[35] The smog related to SUV, automotive and electricity emissions further "inhibits cooling of the air and helps to perpetuate the dome by preventing particles from moving out of the system", thus leaving the city dependent on wind or rain for relief from "pollution-heavy heat".[36] It is from within the symbolic SUV roadways of this sprawling, industrial and CO_2 emitting city that I engage these acts of climatic thinking, IQ dialogues and hermetic contemplations. Following Igjugarjuk's shamanic entrance into Sila's great loneliness for northern wisdom, Colum Cille's sea-road journey to the angelic messages of North Atlantic Isles, Paracelsus' forest pilgrimages for *mêtis*, Antoine Leduc's forested river-road to the *pays d'en haut* and Mother Valade's wilderness mission to the Métis Red River, my acts to a climate of unknowing were ancestrally guided to natural spaces which could inspire a hermetic response to Toronto's popular participation in the West's climatic sorcery. High Park was the forest *nemeton* within a mass of urban asphalt that I continually entered to contemplate this twelve story response.

The continued existence of High Park's ecologically fragmented forests and marshland within Toronto comes by the colonial way of John George Howard. In 1836 he bought 165 acres of land "on the east side of the Humber" and called it High Park because of the hills which allowed one to overlook Humber Bay on Lake Ontario.[37] After his death in 1890, the land was donated to the city on the condition that trees would not be cut down. One result of this gift is that over one hundred years later Howard's trees and wetland offer a refuge from Toronto's heat island. The environmental studies of Hough describes parks as revelatory of why "water and plants are the important natural elements of climate amelioration in the city", for they counteract the destructive effects of the heat island through the creation of "concentric rings of vegetated space to filter and oxygenate the air as it moves inward to the city centre".[38]

While a hot summer suffocation is Toronto's most apparent urban symptom related to the West's CO_2 sorcery, from within High Park I can contemplate a way out of this narrowing experience through hermetically engaging the lead of Hough. He states that "the climate of cities must be understood in a wider perspective that crosses regional boundaries, since the influences of solar energy, global wind patterns, the atmosphere, fresh waters, the oceans and continents and human activities on the land, link cities together in a worldwide interconnected whole".[39] The implication is that my personal and cultural ways of living in Toronto participates in world-wide urban practices that are influencing the climatic theophany's emanations. Recognizing my local involvement in the global dimensions of Gaia's climatic indeterminacy inspires me to follow *Kwäday Dän Ts'inchi* beyond High Park and down the *passage de Toronto* to a four trilogy response which grounds my personal, genealogical and cultural circumstances within an ancestrally-inspired climate of unknowing.

Long Sault *Sharing*

Driving the five hour Highway 401 trip to Toronto from Montreal in the early-twenty-first century makes it difficult to imagine the long winding route which at one time brought *coureur de bois* from the French center of the fur trade to the *passage de Toronto* and Fort Rouillé. Brûlé, Rousseau and many others would canoe northeast from the St. Lawrence River up the Rivière des Outaouais, Lake Nipissing and the French River, before turning southward on Georgian Bay, Lake Simcoe and the portage filled route through the Oak Ridges Moraine to the Humber River. This route was often chosen over the more direct St. Lawrence River and Lake Ontario river-road because of the *long sault*, or long rapids, located a few kilometers west of present-day Cornwall on the Ontario side of the border with Quebec and New York State. A legend is told of Natives who tried to impress upon Champlain at Sault La Chine, near present-day Montreal, the nature of this land that was filled with lakes and rivers, but the image was denied by the explorer as preposterous until he reached the long sault that halted his

journey.[40] The miles of dangerous rapids made other canoe routes more appealing until the early-nineteenth century when taking a stage-coach to bypass the threat became an option in Empire Loyalist Ontario. From this same time come written accounts of trips on the long sault with the French voyageur descendents of the *coureur de bois*. While Louis Hennepin describes "a dreadful encounter of water" which had "a voice-like hissing and howling of fierce beasts", John Duncan characterizes the experience as a "terrible cauldron" that evoked sublime emotions.[41] This numinous power is not the same long sault I grew up with in this eastern region of Ontario during the 1970s and 1980s, for in its place was a town by the same name that barely remembered the rapids which hissed and howled. *Kwäday Dän Ts'ínchi* guided me beyond the *passage de Toronto* to this genealogical and cultural land that I would have to portage as part of my climatic unknowing of the West's urban sorcery.

The Valade side of my family arrived in Cornwall from a farming community near the border with Quebec during the 1950s, and the Leduc family moved from Montreal in the late-nineteenth century. Before this recent history, the Cornwall and long sault area was just beyond the French colonial settlements which halted at Rivière Beaudette because of almost "seven miles of uninviting cedar swamplands".[42] Some estimated that it was unlikely "more than half a dozen white men had ever gazed upon the place" that would be settled by Empire Loyalists in 1784.[43] Almost nine years before Toronto's founding, Sir John Johnson led families of the First Battalion King's Royal Regiment of New York to settle today's Cornwall as Johnstown on Crown lands "beyond the western boundary of the last seigneury holding".[44] The land seemed to these arriving colonials as "largely untamed wilderness", and the experience was not much different with there being "no roads or means of communication" to connect "with major commercial centers like Montreal".[45] Though American communities to the south were cut off due to hostilities and distant Toronto was still merely Simcoe's dream, the Loyalists were not completely isolated. Since they were within Iroquois land, settling the town required negotiations which were led by Johnson for the British and Chief Joseph Brant for the

Mohawk of the Iroquois Confederacy. These men knew each other well for they had both fought the American revolutionaries and, more directly, Johnson's family had Mohawk blood based on a relation between his father and the Chief's sister, Molly Brant.[46] This familiarity allowed Johnson to face "the Council of St. Regis chiefs and warriors over the question" of this land "on grounds of equality".[47] The negotiation's major sticking point was the settlement's potential disruption of the Mohawk route to "Algonquin allies of La Petite Nation to the North".[48] While Brant negotiated a three-mile tract of land along the St. Lawrence's north shore for the Mohawks to continue their trade, Johnson's Loyalists were permitted to settle into an agricultural way that pre-dominated until the mid-nineteenth century Industrial Revolution.

The shift of Cornwall from English farming community to an industrial town of two solitudes largely began with the 1843 construction of the first British Canal around the long sault.[49] The eleven mile canal and six locks that allowed safe passage alongside the long sault made Cornwall an ideal place for entrepreneurs who wanted the lower costs of efficient transportation routes for their factories. Between 1868 and 1882 three Cornwall mills were established as part of an overall trend that saw late-nineteenth century Ontario become "responsible for more than half of Canada's industrial production", with Toronto being a dominant player in the manufacturing "belt that ran from Oshawa west along the north shore of Lake Ontario".[50] The first French arrived in the Cornwall area at this time due to two interacting circumstances: rising labor demand at the industrial factories, and French Canadien farmers of Lower Canada no longer had "enough land to pass on to their male offspring".[51] This unique intercultural development participated in a broader provincial trend that saw increasing numbers of Ontarians leave rural farming life for industrial cities starting in the late-nineteenth century,[52] as well as a twentieth century global trend that saw cities expand their coverage of Gaia from 0.1 to 1 percent and their populations increase from 225 million to 2.8 billion.[53] In 1921 Cornwall almost equally embodied Canada's two colonial solitudes, with

"2,542 of French descent and 3,318 of British descent".[54] On the 1951 eve of the Canada-United States St. Lawrence Seaway construction, the French-English population was 16,899.

The need to more easily access the industrial production of Canada's Lake Ontario region and harness the power potential of the long sault was, in Legget's view, "emphasized in no uncertain manner" by the events of the Second World War.[55] Along with the Canada-United States international coordination of sharing the costs and benefits of building hydro dams and larger shipping canals, the St. Lawrence Seaway's construction also required local commitment for changes that would dramatically impact local lives. The years of dam construction first temporarily diverted the long sault's waters to a catch basin, revealing fish carcasses littering the rocky bottom that had been covered by glaciers and glacial waters for tens of thousands of years. With the glacial reminiscence of these howling waters diverted, the construction of the Seaway steamed ahead while agents convinced people in the immediate area to move their towns and houses at the government's expense. Many, like my grandfather's brother, were forced to relocate by circumstances not of their choosing. Before the Canadian-side of the project could be completed, "three towns, four villages, more than 200 farms, 40 miles of railroad and some 35 miles of highway" were moved away from the powerhouse and spillway dam.[56] The completion of this project in 1958 was announced by explosions which allowed the long sault's "2,200,000 horsepower of electricity" to be harnessed in the shared 32 generators of the United States' Robert Moses Power Dam and Canada's Robert H. Saunders Generating Station.[57] The Seaway's ceremonial opening on June 26, 1958 by Queen Elizabeth II representing Canada and President Eisenhower the United States signaled an increase of large ships finding their way from Montreal to Lake Ontario's industrial belt and Toronto's crescendoing urban CO_2 sorcery.

While Toronto's most apparent manifestation of the changing climatic theophany is a heat island effect, the long sault is projected to experience a decrease in hydropower due to water level declines in the Great Lakes and St. Lawrence River.[58] The 2050 projection of a 0.5

meter decline in Lake Ontario and 1.3 meter for the St. Lawrence River's Montreal Harbor will impact shoreline infrastructure and ecological systems, as well as diminish the long sault power - just as with the 19 to 26 percent losses during "the 1960s low-water period".[59] These projected hydro declines challenges the assumption that a response to peak oil and the West's sorcery can be achieved by simply replacing fossil fuels with renewables. Considering the additional "400 gigawatts" of hydro energy needed to produce a hydrogen alternative to fossil fuels in the United States, Alfred Crosby explains that two hundred more "Hoover dams would do the job; but even if Americans were willing to accept the costs in dollars and environmental damage of that many huge dams, there aren't rivers in size and number big enough for such structures in North America".[60] As a renewable alternative he suggests that "Americans could placard the continent with solar panels and erect forests of windmills from sea to sea", but then supports Tertzakian's critical view of the public's willpower for change by adding that the evidence suggests contemporary North Americans are unwilling "to have solar panels, windmills, or other energy devices constructed in their neighborhoods".[61] Crosby's analysis implies that a response which allows the maintenance of current consumption patterns will need to contemplate the possibility of declining hydro power due to water-level changes, environmental damage, few hydro options and a relatively complacent populace. It can be proposed that the required national and international effort for responding to the West's climatic sorcery will require the kind of regional, national and international coordination represented by the Seaway Project. This coordinated effort is especially instructive for urban areas like Toronto which will require great levels of energy and commitment in developing a response to today's changes.

In a case study analysis of various Western cities on the cutting edge of responding to climate change - of which Toronto is not one - Harriet Bulkeley and Michele Betsill find that local urban climate policies are ultimately dependent upon industry, government and public actors working together on local, regional, national and international scales.[62] All of the case

studies reveal "that where protecting the climate conflicts with other social and economic goals, such as economic regeneration or the interests of particular local industries, any political will towards the former disappears".[63] Even if local industry participation can be negotiated, there is the larger issue of the West's original scarcity limiting responsiveness. Representative of this problem is the finding that even these leading cities assume "that traffic growth is a necessary part of economic growth, and that to reduce the former is to challenge the latter".[64] The result is that policies which aim at "restraining car access to the city centre, increasing parking charges and experimenting with road-user charging" are envisioned as additional strategies that work with the increase of urban road capacity.[65] In the Toronto context alone, the David Suzuki Foundation estimates the continuation of urban sprawl will cost the city $69 billion over the next 25 years in the form of reduced productivity, health costs due to pollution and environmental impacts, not to mention the gridlock's increase of GHG emissions.[66] Bulkeley and Betsill state that since these limited policies "are inadequate, and that reductions will depend on an absolute reduction, or at least containment, of the number and length of car journeys",[67] an effective constraint of urban CO_2 rituals will have to include "national objectives and international targets".[68] While the public wavers at the idea of reducing energy consumption levels and most North American cities support this complacency through limited infrastructure policies, both Canada's and North America's doubly moving crisis displacement further limits an effective national and international response. The pervasiveness of this inaction that is grounded in the West's original scarcity means that portaging the long sault to a responsive urban, provincial, national and international climate policy will require an even deeper intercultural soul searching whose aim is to open out to the IQ proposition of a cosmic economy of sharing.

The long sault's howling response to my second question can be heard as I pilgrimage beyond my familial homeland to Montreal, or Ville Marie. This is the home of the first Canadien-born saint, St. d'Youville, whose Grey Nun mission led her to be given the title

Mother of Universal Charity. Prior to her life, this village was the jumping off point for *coureur de bois* into the *pays d'en haut*, and further back it was Cartier's point of contact with an Iroquois ka-na-ta that adds even more ancient ancestral dimensions to the human relation with this St. Lawrence Isle. My climate of unknowing now follows the French Canadien legends of Antoine Leduc and Mother Valade on their canoes beyond autobiography and genealogy to a *translatio* of a hermetic response to my urban participation in the West's climatic sorcery.

French *Response* to Sorcery

These familial namesakes guide me through the *Enlightenmêtis* of the St. Lawrence's glacial river-road and the THC-informed North Atlantic sea-road to their Norman and Breton ancestral lands on the Atlantic coast of western France. The Celts arrived in this area of Europe around three thousand years ago, while Normans arrived to the south only after their more recent failed tenth century attack of Chartres. Historical sources indicate that the Norman settlers did not expropriate the Native Celtic "population whom they dominated",[69] but, as Bechmann explains, "assimilated and adapted with exceptional flexibility and rapidity the customs and the religion of the conquered lands, without losing their original qualities".[70] This intercultural approach seems to be inherited by later French Norman colonists, like the interpreter Jean Nicolet, the *coureur de bois* Antoine Leduc and Mêtis. In both Normandy and Quebec an ancestral tradition of sorcery was also inherited that persisted in small pockets into the twentieth century.[71] Quebec's pagan sorcery was blended with Catholicism by colonists who, as in France's medieval past, used it "to supplement the beneficial tokens of orthodox religion, such as holy water, medals, or prayers, to enhance their effect".[72] Sorcery and Christianity were complementary approaches to the supernatural, with priests "regarded as men who exercised supernatural powers derived from God, just as the sorcerer drew his superhuman ability from Satan".[73] The ethnographic research of Jeanne Favret-Saada

documents the continuation of this sorcery tradition on the northwest Atlantic coast of France into the 1970s.[74] Her research guides me to a Norman-Celtic inheritance that further clarifies a hermetic definition of the West's climatic sorcery.

While ordinary misfortunes are accepted as "one-off" in this region of France, Favret-Saada explains that sorcery is thought to be at work when the experience of misfortunes are "repeated and range over the persons and belonging of a bewitched couple".[75] When this pattern of misfortune occurs, a qualified unwitcher is approached "with a double request: on the one hand for an interpretation, and on the other for a cure".[76] All the emergent relations surrounding sorcery are, according to Favret-Saada, "centred on the notion of '*force*': who has it; who doesn't; will the unwitcher have enough; doesn't the witch have too much; will the bewitched be able to recover the force he has lost?"[77] The sorcerer uses magic practiced out of sight so as to attract force from those who are unaware and have limited defenses. These same limited capacities requires the bewitched to call upon an unwitcher to "mobilize enough magical force" against the sorcerer before the victim totally loses their own vitality.[78] In this cosmos where vital energy is magically circulated without apparent physical causality, the sorcerer is described as one who is jealous. This is because the sorcerer's "domain is never big enough for him to use", and thus their surplus power is used to appropriate the vitality of others.[79] Though it appears the sorcerer directs this appropriation, Favret-Saada concludes "it is no less clear that the force '*has*' the witch, that it possesses him and obliges him to work constantly, like a slave: indeed he has force but he will never stop being owned by it".[80] From Favret-Saada's anthropological perspective, sorcerers are described as being driven by a self-interested addiction to an appropriated force, one that is not unlike the West's doubly moving original scarcity which hungers for fossil fuels.

The West's current and past colonial globalizing power appropriates the vital energies of other cultures and ecologies in the form of labor, resources and natural services, and then in the ritual manner of a sorcerer externalizes GHGs that emanate patterns of misfortune

throughout Gaia. Exemplary of this climatic sorcery is an Inuit experience that has seen the colonial and post-colonial West appropriate northern land and resources, while also being an integral actor in manifesting a series of environmental crises that today climatically emerges in the form of Sila changes and Sedna's animal movements. The popular urban ritual underlying these animated northern changes is reflected in motor vehicle usage which accounts for 47 percent of the United States' demand for oil, a demand that is three times larger than that of China - the second largest consumer.[81] The same consumptive patterns mark the Canadian experience, with Toronto being symbolic of many North American cities which are owned by a popular participation in automotive rituals that fuel changes in the climatic theophany and today impact Inuit in the north. In the French tradition of my ancestors, the powerful extension of this appropriating appetite is maintained until publicly identified.[82] After sorcery's public identification, Favret-Saada describes the next task as bringing into play the magical power of an unwitcher. The individual who fulfills this role is similar to the sorcerer in that they have a surplus of force, but in contrast to an appropriating jealousy the unwitcher uses their surplus force to help others recapture their vitality from sorcerers. If an unwitcher is successful they oblige the sorcerer "to give back the possessions stolen from his victims", as well as being punished for bad intentions by making "him lose an extra amount" to "the wilderness without anyone profiting".[83] This response to sorcery goes beyond today's environmental calls for global equity and no growth, for it models a forced give-away of more than that which has been appropriated. The unwitcher guides my climate of unknowing to an approach of Gaia's triple movement not unlike the Inuit shaman who returns from Sedna with calls for confessions and propitiation that are meant to bring people back into balance with the cosmos. Such a give-away is what the West seems to need as an integral part of a public and political ritual that signifies an engagement of Gaia by curtailing the deforesting effects of colonial and climatic sorcery.

Observing similar dynamics in an ever-growing food production system that environmentally degrades Gaia, Mora Campbell proposes an alternate way of thinking about food which resonates with an unwitcher-inspired response to the West's popular consumption of fossil fuels and SUV roadways. She offers the metaphor of a clay jug as a "vessel that not only contains our thoughts and observations, but which gathers and evokes sources of sustenance".[84] This metaphor that can also be applied to the gas tank only secondarily suggests a container that can be filled up, for in its primary form there is an emptiness that leads her to "think of fasting and feeling hungry".[85] In a developed world experience where hunger is a choice rather than an external imposition, fasting takes on healing, social justice and spiritual symbolic references. Campbell explains that "fasting cleanses the body, strengthens the digestion, and makes room for new sources of nourishment", and it can also be used "as an act of acknowledgement and giving to those without food".[86] This metaphor implies that through reducing the number and length of car journeys, the size of vehicles and the use of fossil fuels, it may be possible to provide personal, community and ecological space for the spiritual sustenance falsely associated with a SUV purchase. Such a ritual requires deep climatic thinking and contemplation, acts which, if taken seriously, will slow public participation in the political economic crisis displacement of the West's sorcery. This is not an act of sacrifice based in original scarcity, but rather an act of giving that ritually resonates with the cosmic economy of the climatic theophany. To contemplate the urban nature of this give-away I considered whether or not the West's CO_2 sorcery has any viable social function. Guiding this inquiry is another anthropological analysis that has intercultural similarities to the dynamic uncovered in western France.

Drawing upon the methodology of Favret-Saada for ethnographic research with the Mekeo of Papua New Guinea, Michele Stephen examined the sorcerer or "man of sorrow" relation with the unwitcher or "man of kindness".[87] She became closely acquainted with the social role of sorcery in Mekeo society by personally engaging a man of sorrow by the name of

A'aisa. While his magical counterpart, the man of kindness, is situated at the center of the community, A'aisa lived on the edge where the community receded into the forest. Stephen explains that this marginal position symbolizes his association with the darkness that surrounds human life and empowers sorcery, though his existence also "necessitates the existence of the man of kindness, since the flow of physical matter must be maintained despite the disruption of death".[88] Unlike the man of kindness who helps to perpetuate the flow of vital energy into communal life, the man of sorrow undergoes a lengthy initiation that creates a powerfully individualized personality who can manifest destructive powers. In recognizing that the sorcerer is "not merely he who causes sorrow but he who suffers from his invulnerability", Stephen is led "back to the pathology of the self in Western culture where selves are so rigorously bounded, or should be, that all must suffer from painful isolation".[89] Whereas the West's original scarcity assumes "that desire for power is some kind of human universal", she explains that for "cultures where selves are open and permeable to others, extraordinary measures are needed to create a will as individuated" as that of a sorcerer.[90] A'aisa offered Stephen a discriminating view of sorcery's place in society, for as she states the "man of sorrow is not simply 'bad' in moral terms", what "is 'bad' is if all people were to follow the same path".[91] The initiation undergone by the man of sorrow is a "symbolic expression of the suffering endured by all who seek personal power via secret knowledge", and as such A'aisa "represents not how ritual power is in fact exercised, but how it should be used within the constraints of human society".[92] Stephen's analysis suggests that rather than the West's political economic and popular CO_2 sorcery being simply rejected, perhaps its practices also need to be constrained by a broader social order and individual etiquette.

This anthropological insight into my cultural inheritance of a Norman-Celt view on sorcery suggests that there is a place for the laissez-faire adaptation and sustainable development mitigation polices which are so prevalent in contemporary Western discourse. However, they should be marginalized as secondary practices in a social order that is primarily

concerned with the interests of vitalized global, national and local communities. In other words, the first act's objective climate science, GCMs, cost-benefit analyses, ecological footprints and Kyoto Protocol are tools that need to be subservient to an indeterminate climatic thinking. More than that, this climatic thinking needs some kind of hermetic practice for entering an indeterminate model of Notre Dame de Gaia that is aware of being a "co-participant in the evolution of a knowledge and a science that belongs to humankind no more, and no less, than it belongs to the Earth".[93] *Kwäday Dän Ts'inchi* and these Norman-Celtic ancestors now guide my pilgrimage down Gaul's forested pilgrim paths to Notre Dame de Chartres and a climatic unknowing of those political economic urban rituals that so define the West's climatic sorcery.

Unknowing the Climatic *Apocalypse*

In an age of twenty-first century conveniences that allow me to drive by the long sault in minutes or fly from Toronto to Paris in hours, it is easy to forget the real danger of trials that were traditionally critical to pagan-Christian forest pilgrimages. A small symbolic impression of these inconvenient realities of a world in flux hit me as I concluded twelve hours of air and train travel by entering the Royal Portal to Notre Dame de Chartres on an overcast day in May 2006. After sitting with the Black Madonna, I followed the Sun path around the cathedral's interior and came across a vision of the Blue Virgin shrouded with a blue canvass for restoration. In this moment of high expectations and tired jet lag, the restoration made the pilgrimage seem futile as my preference for the Blue Virgin's *viriditas* over the Black Madonna's numinous power became apparent. It was not until the clear blue sky of the next morning that I was able to contemplate the hermetic message of this disruption. With the Sun's rays warming the air outside the cathedral, I entered the Royal Portal once again. Following the contemplative Sun path beyond the Black Madonna, I was unexpectedly struck by the morning's bright light radiating through the Blue Virgin's shroud. This *viriditas* enlightened a

divine power which can be sensed even when shrouded by Black Madonna changes. The light impressed upon me the reality that these two opposing symbols reflect cyclical gradations in the One's emanating manifestation of Gaia. In offering a view of medieval warming, *Little Ice Age* and industrial warming as the One's emanating response to an 8,000 year old tradition of human sorcery, Notre Dame de Chartres inspired me to contemplate a response to CO_2 sorcery that is grounded in a hermetic ordering of climatic thinking.

In the latter quarter of the twentieth century an anonymous French Catholic monk dedicated a book of letters to Our Lady of Chartres that contemplates the role of hermeticism in what I would define as interdisciplinary thought.[94] Expanding upon the complementarity of science and religion discussed in the first act, this monk explains that hermeticism is neither a science, a religion nor opposed to either. Rather, hermeticism is a "double discipline" for uniting "revealed truth with truth acquired through human endeavor".[95] Though not a science which reduces its vision to a single discipline, hermeticists are ideally described by him as making "use of the sciences and their results".[96] He further clarifies that hermeticism is not a humanistic philosophy concerned with "fulfilling the function of a 'science of sciences'", for its practice also includes the vertical religious dimensions that surround sciences and humanities in an aspiration "to summarize experience in all planes".[97] In offering a method for synthesizing interdisciplinary science and religion within climatic thinking, this monk circumvents a post-Enlightenment science which disparages religion, Christian fundamentalisms that deny science except when self-serving, and the West's common disciplinary grounding in original scarcity. Combining horizontal interdisciplinarity with vertical religious practices makes it possible, in his words, to no longer "think *alone*, but rather *together* with the anonymous 'choir' of thinkers above, below, yesterday and tomorrow" so that "*I think* then gives way to *it thinks*".[98] The implications for a twenty-first century hermeticist is that the disciplinary knowledges of climatic thinking needs to be hermetically

ordered so as to resonate with the broad-ranging ancestral and elemental voices of a climatic theophany which manifests throughout Gaia.

This monk's thinking together is influenced by Dionysius who similarly states that "communion" and "gathering" can be forged into "a divine unity out of the divisions within us".[99] For a community to preserve in its "own human way the characteristics which enable it to be like God and conform to him", Dionysius proposes an ecclesiastical hierarchy "harmoniously divided into orders in accordance with divine revelation" of the celestial hierarchy.[100] Though Roman Catholicism interpreted this kind of writing as confirmation of a hierarchical Church, Eriugena recites Dionysius to inspire a deeper ordering that bonds humanity, Gaia and theophany "with ineffable friendship and insoluble unity":

> Let us understand love, whether we are speaking of the divine, angelic, intellectual, spiritual, or natural kind, as a unifying and blending power which moves higher things to forethought of the lower, joins equals in a reciprocal bond of communion, and turns the lowest and subordinate toward their betters, placed above them.[101]

Contemplating such a loving response to the One's emanating thoughts on the West's climatic sorcery - as mediated by orbital cycles, Sila, Atlantic THC, CO_2, forests, glaciers and Sedna's northern animals - requires the symbolic *viriditas* experienced in an indeterminate model of Notre Dame de Gaia.

A climatic thinking that hermetically orders representations of the theophany's choir based on the strengths and weaknesses of disciplinary knowledge is difficult to grasp, even for those who promote interdisciplinarity and intercultural dialogue. In her feminist analysis of mystic practice, Catherine Keller describes an argument between the French philosophers Serres and Latour that displays this problem.[102] While Latour's view on the West's Internal and External Divides supports my introductory extension of climatic thinking into IQ dialogues,[103] his critique of Serres' postmodern view on angels[104] suggests he would be hesitant in accepting my hermetic act of engaging the climatic theophany. Keller states that Serres' "unscientific

epiphany of angels understandably perturbs Latour" because, in his words, this theological quarrel "is not going to clarify things for the public".[105] Refuting Latour's claim that dialogues about angels are insignificant, both Serres and Keller find them to be quite relevant to the present moment's "turbulence or dissipation of energies" because these messengers from the transcendent are, as Serres states, "restless, unsystematic, troublemakers, boisterous, always transmitting, not easily classifiable, since they fluctuate".[106] The anonymous monk also confirms that hermeticism fulfills an important role for engaging today's disruptive messengers by explaining that the practice "has nothing to do with the desire to have 'ready made answers' to all questions, obtained with minimum effort and maximum result", for the questions of interest "are *crises* and the 'answers' that it seeks are *states of consciousness* resulting from these crises".[107] In contrast to the doubly moving crisis displacement of Western political economics, today's disruptive thoughts of angels calls for a hermetic climatic thinking that can politically respond to CO_2 sorcery and Gaia's Black Madonna manifestation. The public and political economic crisis for the West and its urban centers is that the solution to its participation in climatic sorcery is not technical, but rather an issue of responding to an improper cultural etiquette for relating with Gaia, the climatic theophany and the One.

On this pilgrimage that began by following *Kwäday Dän Ts'ínchi* beyond the *passage de Toronto*, the first challenge I met was the long sault's ancestral howling about the popularity of original scarcity. This was followed by a consideration of the Norman-inspired tradition of embedding sorcery within a cosmic economy. At Chartres, the Black Madonna signifies the secular and religious apocalyptic crisis of today's climatic sorcery which needs to be contemplated. While Canada's failed Liberal dreams and Conservative denials represent two political economic forces in this sorcery, it is with Bush's American way that an apocalyptic sense of a divine response is religiously affirmed. Contrasted with my hermetic engagement of Gaia's indeterminate revelation, this fundamental Christian approach is locked into an original scarcity that views apocalypse as a divine punishment for those who have not conformed to a

Christian "foundation that will not shift". No amount of climatic changes can challenge believers to transform since they are saved, that is until the disconnection of Christianity from climatic thinking reveals the horrible misinterpretations of the One's emanations. These Westerners are not alone in the ensuing challenge, for this is the same apocalyptic crisis of belief in original scarcity that afflicts the popular liberal and secular responses to a peak oil threat which will increasingly surround urban life in a twenty-first century revelation.

In his book on the natural history of human energy use, Crosby concludes that one of two apocalyptic crises will face humanity in the early twenty-first century. We are either "standing on the peak of our energy achievements poised for the next quantum leap upward", or are teetering towards participation "in nature's standard operational procedure of pairing a population explosion with a population crash".[108] The energy policy research of Bent, Orr and Baker outlines "some general goals" that are important if urban humanity is to make Crosby's "quantum leap upward".[109] These include the development of cleaner fossil fuel technologies for short-term use, "accelerated development of alternative energy resources", "stabilization of world population with a smaller per capita energy" and reduction in "per capita energy use in the developed world" while increasing energy access in developing countries within an overall scenario of reduced energy consumption.[110] They also propose that nuclear power will have to be utilized as a stop gap measure in "the transition from fossil fuels to renewables",[111] though this awakens other crises that are intimated by the United States' National Academy of Science's proposal of ensuring that underground nuclear waste depositories be adequate for 300,000 years.[112] While the change associated with running "out of cheap energy sources on which we have become dependent" is a significant crisis, Richard Heinberg proposes that this is merely "the aspect of the predicament that is most likely to present itself to us first and most forcibly".[113] These rising energy prices come into resonance with urban heat islands, uncertain weather and Inuit observations of the north's climatic "canary in the mine" to reveal the West's entrapment "in a perpetual growth machine".[114] Which of Crosby's two projected crises is

experienced by Western culture is largely dependent upon the political response to this situation. Maintaining belief in climatic sorcery will call forth a heightened though indeterminate Black Madonna experience, while engaging in a response inspired by a hermetically ordered climatic thinking will change this society on a fundamental cultural level due to its rejection of original scarcity.

The anonymous monk symbolizes the difference in these apocalypses by explaining that while the dependence of Western energy production on coal, petrol or hydrogen atoms is based upon the ideal of dominating "Nature by means of putting into play the principle of *destruction* or *death*", the social and ecological effects of this way leads to a hermetic response that imagines "efforts and discoveries in the opposite direction, in the direction of *construction* or *life*".[115] The West's climatic sorcery manifests a Black Madonna which calls for a constructive ritual response if a self-fulfilling global apocalypse is to be minimized. Just as Dionysius' ecclesiastical order parallels the celestial hierarchy, Serres states that the purpose of ritual or "ecclesiastical liturgy is to imitate the gestures, dances, music, songs, words and actions of angels, in the presence of God".[116] The angelic and ancestral thoughts of the climatic theophany are, based on this view, acts of prayer that call people into ritual accord with the divine, and their dark message of crisis in Gaia's many unique bioregional manifestations requires an appropriate ritual. As the anonymous monk explains, the "key to the Apocalypse is to *practice* it, i.e. to make use of it as a book of spiritual exercises which awaken from sleep ever-deeper layers of consciousness".[117] It is such a ritual initiation that began to present itself in Notre Dame de Chartres' Black Madonna shrouding of the Blue Virgin *viriditas*, and Her darkness guided my pilgrimage deeper into the climatic unknowing of hermetic ancestors who temporally reverse the Norse passage and return me to Colum Cille's North Atlantic Isle of Iona.

North Atlantic Intercultural *Wisdom*

Iona symbolizes in dramatic ruins the relation of cultural structures to the Black Madonna's apocalyptic cycling through medieval warming, *Little Ice Age*, industrial warming and uncertain Atlantic THC-inspired future. Paired with the abbey's restoration that began in the early decades of the twentieth century is the twelfth century nunnery ruin of *An Eaglais Dhubh* which, as with Notre Dame de Chartres and Ville Marie, was dedicated to the Virgin Mary. In the dawn hush of this ruin can be heard a chorus of sheep and birds, their voices muffled by the hush of light rain. Green grass carpets the floor and grows through the rock walls, large snails are ever-present and the mists create a ceiling which needs no walls. Through the church's once stained-glassed window sits a hoard of crows upon a skeletal tree that obscures *Cnoc Mór's* hillside. Weathered within the crucible of the Atlantic Ocean, this ruin reveals, in Robert Harrison's words, both "the fact of destruction" and "the fact of survival - the survival not so much of the ruins themselves as of the earth on which they stand or fall".[118] The weathered stones are ancient revelations of elemental presences of a climatic theophany that uses time to wipe away from Gaia's bioregions cultural and religious symbols. This Isle's angelic and ancestral presences guide me to the role of mystic practices in a climatic unknowing of interdisciplinary thought concerned with responding to Toronto's urban participation in the West's climatic sorcery.

My contemplation in *An Eaglais Dhubh* began with Harrison's description of these deteriorating structures as spaces which "allow the opening of crypts and folds of human time in the midst of nature's transcendence".[119] Ruins present death and destruction as obligations that, in his view, need to be encountered so that personal mortality is recognized as "the foundation of one's relations to those who live on, no less than to those who have passed away".[120] Complementing the inspiration of Notre Dame de Chartres' stone-carved ancestors above each Portal, Iona's ruins instill an awareness of mortality that steps towards a dialogue with long forgotten ancestors. As Harrison explains, "intercourse with the dead must be frank

and ongoing: so that we may keep open the possibility of a 'reciprocative rejoinder' that never simply denies but freely avows or disavows the will of the ancestors".[121] When this reciprocal dialogue does not happen, then the human community is caught in a monologue which allows the dead to "have their way with us".[122] Since "the dead possess a nocturnal vision that the living cannot acquire" because "our secular lives blinds us to certain insights", Harrison concludes that in moments "of extreme need one must turn to those who can see through the gloom".[123] This ruin-inspired dialogue between mortals and ancestors is today kept at a minimum by the West's original scarcity, and the results are apparent in the CO_2 rituals of liberal failures, conservative denials and North America's self-fulfilling apocalypse.

While Harrison explains that the act of engaging ancestors allows us to "inherit their words so as to lend them voice",[124] Berman points out that hermetic practice traditionally engages an ancestral past so as "to recover our future".[125] Applying this temporal reversal to the environmental crisis, Berman states that hermetic practice does not simply advocate "a program of no growth or industrial slowdown", but - as with the first act's proposed "native anthropology" - engages a dark past which the West lost contact with "during the last four centuries".[126] Many hermeticists and mystics, like those authors known to us as Dionysius and Hermes Trismegistus, methodologically affirmed this dark past through employing pseudonyms. Though the Enlightenment invalidated hermeticism because of what was viewed as Dionysius' and Hermes' misrepresentations of self, Eamon explains that cloaking one's identity within a "trusted ancient name" was based upon the conscious recognition that one's culture was borrowed from the past.[127] The original identity which came from the hermeticist's particular body, family and culture merely clothed a common source that reached back through the ages. Affirming ancestral legends which ultimately recede into the One requires a further step of practicing anonymity, such as with the English author of *The Cloud of Unknowing* and the twentieth century hermetic monk. Reflecting upon the intercultural prevalence of anonymity amongst mystics and artists, Berman finds this practice to be an act which

symbolizes the "mark of God" by stepping "out of the way" of self-aggrandizement.[128] Employing pseudonyms and anonymity are methodological acts which symbolize the importance of the climate of unknowing in any approach of Gaia. Discussing the importance of such mystic practice to ecumenical dialogues that parallel the Earth Charter, the monk Thomas Merton states that "as long as the dialogue proceeds merely between research scholars and concerns only the objective study of documents, it will lack its most essential dimension".[129] To silence Iona's ruins is to lose access to a climate of unknowing which can engage angelic and ancestral emanations that have an apocalyptic potential to transcend individual lives, political economic movements, cultural monuments and climatic thinking.

Though hermeticism is no more a mystic tradition that it is a science, it does promote engaging mystic practices as a means for staying clear of pessimistic hermeticism. Recognizing this requirement of hermetic practice, I followed *Kwäday Dän Ts'inchi* and my other hermetic ancestors beyond *An Eaglais Dhubh's* glassless northwest window and the skeletal trees on Cnoc Mör to the climate of unknowing intimated by Colum Cille's hermit cell. This pilgrimage walks past the ruins and restored abbey to the north end of the Isle before cutting southward across hills that lead the way to Cnoc Nan Bradham Mör. Just below this hill, in the valley plain, are the remnants of a stone circle that mark the cell where Colum Cille is said to have secluded himself during some of his legendary angelic dialogues. The cold winds blowing off the North Atlantic and through this valley inspire an unknowing of those urban GHG rituals which may shift the emanating voice of the THC. While climatic thinking understands the uncertain future of the THC as related to the indeterminate relations between glacial melting, orbital cycles and human GHG emissions, Colum Cille and Eriugena inspire a complementary contemplation of elementary angels emanating from a divine One which interconnects Western Europe, the Arctic and southern Ontario. This place impressed upon my hermetic ordering of climatic thinking, or climate of unknowing, the recognition that all models, including Notre Dame de Chartres, eventually end in ruins. Consequently, all

knowledge informing static or indeterminate models needs to be unknown by going to the anonymous margins of life in what Igjugarjuk referred to as Sila's great loneliness.

The unknowing inspiration of these North Atlantic winds carried my climate of unknowing to Alastair McIntosh's statement that Iona and Scotland's Western Isles reveal "the fullness of God" and "stand as a symbolic place on Earth, one that if we forget or neglect, we will come undone".[130] This Scottish environmental philosopher fought throughout the 1990s for community control over land reform on the Isle of Eigg, and against the development of a superquarry on the Isle of Harris. One challenge McIntosh faced as a leader of this movement concerned how to confront the historically entrenched power of the Isles' laird who wanted to surge ahead with projects like the superquarry. This development was grounded in a history of injustices that afflicted the people of these Isles ever since the Highland clearances of the late-eighteenth and nineteenth centuries. One response to this history of dislocating Celtic-Norse Scots was, for McIntosh, to ask for help from a Canadian Native leader of the Mi'Kmaq nation who had experience in fighting a historically entrenched colonialism that, in this hermetic act, is associated with the West's climatic sorcery. This inter-Atlantic alliance that resonates with the Dorset-Norse legend of white martyrs in the Mi'Kmaq land of Cape Breton offers one more recent intercultural story that provides insight on the political dimensions of a mystic response to the West's apocalyptic sorcery.

After hearing about the Mi'Kmaq struggle against a superquarry development project in eastern Canada, McIntosh contacted one of its leaders by the name of Sulian Stone Eagle Henry.[131] This Chief of the Mi'Kmaq warrior society who is a Sacred Pipe Carrier, leader of the First Nations Environmental Network and involved in the 1990 Oka conflict with Canada and Quebec over land rights, received the phone-call with silence and questioning as to what this Scottish issue had to do with his concerns. With the discussion failing, McIntosh took the bold step of going beyond Western rationality and formalities. Shouting down the phone he asked Sulian whether he knew where the people of his superquarry development, with "names

like MacAkill and Kelly", came from.[132] Responding to his own question, McIntosh explained that these immigrants "came from places like the Hebrides and Ireland in the Celtic world", and that they were "pulled like weeds from their own land and transplanted onto yours".[133] Drawing the intercultural connection into the present, he stated that we are "both from superquarry-threatened communities".[134] We are "both from communities that were fucked over", and that in both cases they "cleared the native people and now they're wanting even the rocks.[135] To this historical insight McIntosh added a passionate connection of his situation to Sulian's totems of Stone and Eagle by stating that "this mountain is about stone", and "eagles nest just 400 metres from the planned quarry".[136] Brazenly going one step further, he explained that the eagle is his own Scottish clan's totem, and that "the eagles request you to come and help us". Sulian responded from across the North Atlantic: "Ok… When do you want me to fly in? What do you want me to do?"[137]

The historical difficulties between the Scottish colonists of Canada's east coast and the Mi'Kmaq meant that this turbulent conversation was merely the first hurdle in nurturing an intercultural partnership towards an unknowing of colonial injustices. When McIntosh brought Sulian to Iona for initiation into the spiritual sense of these Isles they experienced a stormy delay of their ferry crossing. As the storm raged Sulian's anger concerning Scottish involvement in his people's colonial disruption also climaxed. The subsequent airing of dark emotional memories was followed the next day by a clear morning ferry passage to Iona that left this Sacred Pipe Carrier "rapt by the atmosphere".[138] Looking over the ruins and the restored abbey, Sulian exclaimed "I never knew you people had places like this!", and "If you're into all this, then how come your people destroyed our sacred sites?"[139] Experiences like this helped Sulian and McIntosh bridge intercultural historical realities and spiritual understandings, ending with Sulian publicly stating that he would use the Mi'Kmaq's 1752 treaty with the British to "take the summit of your mountain… into sanctuary".[140] The media around this symbolic partnership worked with legal actions to halt the superquarry, and the Isle

of Eigg became the first Scottish community to clear the laird from the land. From this intercultural success, McIntosh came to define a tripartite vision of community that is responsive to interacting social and environmental injustices, and is inspirational for my unknowing of Toronto's climatic future.

First, the community needs to be significantly re-connected to local land so that reverence can inform ecological restoration and sustainable economic practices.[141] In contrast to the disruptions of pagan deforestations, Highland clearances, North American colonization and today's globalizing double movements, McIntosh explains that community land trusts like the Isle of Eigg Trust provide people with an opportunity to build "a sense of 'bioregion' that is human-scaled", even if people are not necessarily working the land itself.[142] He thinks this bioregional sensibility is important because it "builds a sense of identity" that carries common values while generating "the responsibility necessary for upholding both the social and natural environments".[143] From within Colum Cille's cell, the health and strength of Gaia's diverse and distant bioregional identities are recognized as being interconnected to the One's emanating response to the West's climatic sorcery.

His second view on community is that in a time of massive cultural migrations, reverence of the local has to transcend racism and classism so that an "inclusive sense of belonging, identity and values" can be continually created based upon intercultural sharing.[144] It is interesting that what allowed McIntosh to fully appreciate this inclusive sense of community was his calling upon Sulian's Nature mysticism that transcends original scarcity by recognizing his unique political responsibility to eagle and stone. This spiritual responsibility to Gaia's beings resonates with a dialogue I had with Jaypeetee concerning an eighth century Scottish Pict stone-carved image of a sea goddess that reminded me of Sedna. He responded to the Pict image by first speaking about a passage from Rasmussen where a shaman is "asked to draw an image of Sedna and he is shaking and clearly in a state of great distress".[145] After explaining that images of this indweller were traditionally only for the initiated understandings

of shamans, Jaypeetee added that with Christianity "Inuit started overtly portraying Sedna in a mermaid form to preserve some of the tradition".[146] While he concluded by speculating that the Picts were probably also in a similar transition to Christianity at the time of this carving, of which there is supportive evidence, the overall dialogue spoke to an archetypal ecological experience of northern waters as sea goddesses that hold human actions responsible. By likewise holding my climate of unknowing responsible to animals, Sedna-like bioregional manifestations, a global Gaia, the climatic theophany and the unknowable One, it may be possible to more respectfully engage Native people in intercultural dialogues aimed at responding to a colonial legacy of injustices which are interconnected with the West's climatic sorcery. This understanding adds a hermetic sensibility to the intercultural symbol of the Canadian Maple Leaf uncovered in the first act, and thus guides my climate of unknowing into a Toronto that is informed by Native, colonial and twenty-first century immigrant cultural knowledges.

McIntosh's third vision of community proposes the need for spaces that are spiritual in nature, though not necessarily of formal religion, "where one can take rest, compose and compost our inner stuff, and become more deeply present to the aliveness of life".[147] My hermetic act was ancestrally guided through the sacred spaces of Iona and Chartres to contemplate the One's climatic emanations throughout Gaia, and now on the other side of this pilgrimage *Kwäday Dän Ts'ínchi* leads me beyond Colum Cille's cell to a Toronto-based contemplation of a bioregional response to the injustices of this climatic sorcery that is being visited upon people like the Inuit. My return-trip to a southern Ontario sacred space which localizes the climate of unknowing flies above the Celtic-Norse North Atlantic sea-road, the eastern coast of Vínland, Quebec, Ville Marie and the long sault before landing at Pearson International Airport next to the Humber River's *passage de Toronto*.

Twelve Story Return to Highona

The twelve story flight of these four trilogies has transported my climatic unknowing of the changing theophany to Chesterfield Inlet, Chartres and Iona via the fuel intensive CO_2 emissions of airplanes. This pre-dominantly urban-based ritual consistently returned me to a bird's-eye view of Toronto's buildings, concrete and smog-filled skyline. Contrasting this heightened CO_2 approach is the pre-aviation and pre-railroad initiation of Toronto's colonial pilgrims who arrived via forested river-roads, developing canal systems and Great Lakes in a dark uncertain reality. Beginning with the experience of "mainly a French-speaking country" along the St. Lawrence, the Canadian essayist Northrop Frye writes that the traveler edged into the land "like a tiny Jonah entering an inconceivably large whale".[148] Even an Empire Loyalist journey to Toronto which by-passed the long sault with a canal would impress one with the reality that, as Frye states, while entering "the United States is a matter of crossing an ocean; to enter Canada is a matter of being silently swallowed by an alien continent".[149] These colonials came to live in isolated communities that were "confronted with a huge, unthinking, menacing, and formidable physical setting", and consequently he proposes they developed "a garrison mentality"[150] - a Canadian original scarcity. For Frye Canada's urban creations epitomizes this mentality in their expression of "an arrogant abstraction, the conquest of nature by an intelligence that does not love it".[151] Despite Toronto's deforestation, Hough's environmental studies offers insights for finding a way out of Frye's garrison. He looks upon urban ecologies like the Humber River and High Park as still revealing "native plant communities that have remained relatively unaltered" from an earlier time of "natural forests or wetland".[152] The Humber River is still 45 percent a rural watershed of Carolinian forest marked with a "unique system of greenways" that "maintains the spirit of historic" *passage de Toronto*.[153] In Hough's view, these places that link natural and urban processes are an "important historic and educational opportunity for nature in the city".[154] Re-entering High Park from this *passage de Toronto* and the sacred ecology of Iona and Chartres inspires me to

conduct a hermetic *translatio* that transforms this urban Isle into Highona. This is my bioregional sacred space for climatically unknowing the original scarcity underlying those popular urban practices that fuel the West's climatic sorcery.

As with the forest and island *nemetons* situated at the socially abundant edge of interacting ecologies, Highona's Boreal forest to the east, Carolinian forest on the high sandy soil and Prairie Savannah in the middle offer a diversity of spaces for the seasonal changes of over 200 bird species. Protracted and regular stays on this sacred urban Isle make it apparent that my personal, genealogical, community and cultural identity is surrounded by the daily rising of the Blue Virgin's spring *viriditas* and the Black Madonna's numinous nights and dark winters. The contemplative walk around Notre Dame de Chartres is here transformed into Notre Dame de Highona's regional manifestation of a climatic theophany that has cycled through Younger Dryas, Medieval Warming, Little Ice Age and the present industrial warming into an indeterminate future. These emanations inspire me to interconnect Toronto's contemporary urban and colonial practices to a dark past when the Ice Age froze Ka-na-ta and southern Ontario's river-roads within the Laurentide Ice Sheet.

Approximately 16,000 years ago Gaia's orbits began shifting towards the Sun, and in the Toronto area these changes brought glacial recessions as ice cover became melt waters impounded in valleys.[155] The bluffs around the city demarcate Lake Iroquois' formation around 11,000 B.C.E. Fifteen hundred years later the Champlain Sea swelled this lake and the St. Lawrence Valley with water arriving from the much larger ancestral manifestations of the Rivière des Outaouais and French River. By 8,500 B.C.E. these shifting waters allowed the southern Ontario area to be "invaded from the west, south, and east" by "plants and animals that had survived the glacial period in different areas".[156] The first peoples to follow these glacial, vegetal and animal movements arrived sometime around 10,000 B.C.E. as hunting bands principally subsisting on caribou.[157] With the temperatures continuing to warm, the area's tundra, shrubs and spruce gave way to a boreal forest, and subsistence was transformed

from wide-ranging caribou hunting bands to many Native groups "restricted to single river valleys and to portions of larger ones".[158] Archaeologists propose that 2,500 years ago the Great Lakes region's present intercultural Iroquoian elders arrived, followed a couple centuries later by Algonquins.[159] One millennia later the post-Lake Agassiz warming gave way to a short period of cooler climate that saw "life zones gradually retreat southward again".[160] This cooling shifted once more with the deforesting medieval warmth which facilitated Norse, and possibly Celt, arrivals on Vínland shores. The next pandemic-inspired *Little Ice Age* began in the area at around 1450 with temperature decreases that "were on average 1-2°C lower than they are at present".[161] At last French and then Empire Loyalist colonials arrived, thus pre-saging Notre Dame de Highona's numinous manifestation of an industrial warming fuelled by SUV desires and automotive rituals which now conceal these ancestral impressions of Toronto's cycling apocalypse.

Though the climatic sorcery that began 8,000 years ago may have shifted the timeline of glacial advances that will eventually scrape Toronto "off the surface of the Earth" and dump "the twisted and mangled remains far to the south",[162] its present unsustainable Western practice has not allowed Toronto to side-step other apocalyptic possibilities. Most cities in the early twenty-first century symbolically epitomize this indeterminate future. As Hough explains, they are places "governed by unlimited energy resources and by attitudes that have paid little heed to the necessity for a sustainable future, or to the relevance of nature".[163] Confirming Frye's view of the garrison mentality, Hough adds that the city's concrete grids reflect a "single-minded, simplistic and fragmented" way of organizing life which has resulted in small fragmented woodland and pond ecosystems like Highona.[164] In my dialogues with Inuit on Sedna such climate-sensitive fragmented ecosystems were understood as reflecting a recession of animal life away from people into the bioregional indweller's sublime depths. This IQ-inspired view suggests that Toronto's urban machinations not only cause fragmentation and climatic change, but evokes Notre Dame de Highona to simultaneously pull

away Her bioregional *viriditas* because of these indiscretions. As with Sedna's dirty and tangled hair, today Highona is often clothed in a Black Madonna smog and heat island which surrounds Toronto with emanating signs of a potentially apocalyptic future. The interactions of THC and glaciers could inspire a centuries long severe northern cooling, or perhaps the projected continuation of a CO_2 initiated warming will simply result in the relentless increase of extreme events like Hurricane Katrina to the south, melting in the north and the suffocation of urban heat islands over the next few centuries of Toronto life. These emanating changes around North America, Canada and Toronto may be further darkened by their interaction with a peak oil scenario that will apocalyptically confront the doubly moving sorcery of a popular garrison mentality with the challenge of imagining an alternative way of living in this place.

Fortunately my hermetic experience within Notre Dame de Chartres revealed that a dark fear of Highona's Black Madonna manifestation only symbolizes one possible extreme apocalyptic response in this twelve story return. The apocalyptic extreme inspired by the urban shrouded Blue Virgin manifestation of Highona can also guide me to a climatic unknowing of the West's original scarcity, Canada's garrison mentality and Toronto's concrete grids. In a critical re-reading of Frye's garrison mentality, Susan Glickman argues that he is only looking at one side of a sublime equation which in eighteenth and nineteenth century colonial writing recognizes "fear of the unknown" as a transitional "first stage in an imaginative ascent".[165] Drawing upon the example of Scottish colonial arrivals from the Highland Clearances, Glickman explains that in "fleeing poverty and persecution" these people did not intend "to recreate exactly what they left behind; they were trying to make something better".[166] The sublime land was for these people "not a wilderness of horrors but a space of opportunity", and she finds this partnering of Frye's "garrison mentality" with admiration to be "one of the formative ideas of Canadian culture".[167] The spring *viriditas* of Highona's Blue Virgin manifestation inspires such admiration, for in the midst of today's industrial warming She

buffers my contemplation of Toronto's surrounding heat in a hermetic greenery of ancestral, angelic and climatic voices.

The concrete shrouded Highona can, as Hough already pointed out, provide important ecological and cultural revelations that are relevant for responding to the West's climatic sorcery. Beyond proposing an increase in urban tracks of forest and vegetation as a means to climatic amelioration of the heat island effect, Hough adds that the actual infrastructure of cities can be overgrown by combining "traditional wisdom, modern science and intelligent planning" in the use plants and water on "walls, floor and roof surfaces".[168] Resonating with McIntosh's vision of sustainable cultures being based in bioregional ways of living, these practices can create a "natural climatic control" that "in large measure restore the energy balance through evaporation of water into the air and the metabolic processes of plants".[169] Green roof infrastructure can also help in CO_2 sequestration by providing "additional space for vegetation to complement urban forestry".[170] While solar roofs can convert the Sun's energy into "heat or electricity", the green roof can prevent "solar energy from being converted to waste heat", and in the process "cool the atmosphere above the roof and the floor beneath it".[171] Hough also proposes that new buildings and landscapes can be designed to reduce wind impact and maximize solar value to "create favourable micro-climatic environments".[172] While effectively outside Toronto's garrison mentality, Notre Dame de Highona's polyphonic *viriditas* inspires an urban response to the West's climatic sorcery that is apocalyptic on global, bioregional and cultural scales. In my climate of unknowing such urban reforestation goes beyond global CO_2 sequestration, for it is also about humanity giving room for Gaia to re-forest sacred spaces where one can ritually dialogue with Notre Dame de Highona as a bioregional manifestation of the climatic theophany.

This optimistic reforestation is integral to an overall hermetic response that marginalizes the West's climatic sorcery through a number of intertwining acts which hinge upon an apocalyptic-inspired popular fast of fossil fuels. The yellow-grey haze which

surrounded my Toronto return-flights symbolizes the need not only for reduction of urban roadways and thus car journeys, but also a potential future when a global cap of sustainable airmiles informs an internationally monitored per capita system. While a hermetic response to the individual, national and international limits of flight needs to consider ecological economic systems of trade and justice, in my climate of unknowing these practical tools are ultimately responsive to scientific understandings and mystic impressions of Gaia's manifestation of the One. Such a ritualized fossil fuel fast is thus ultimately concerned with shifting to renewable energy and intercultural acts that can re-order the West's originally scarce double movements. This mutually constituted hermetic approach leads me to follow *Kwäday Dän Ts'inchi's Enlightenmêtis* bridge towards future intercultural dialogues with the Iroquois and Mississauga cultural elders of Highona, Toronto, southern Ontario and the Great Lakes. As with my engagement of Inuit, these intercultural dialogues will need to be concerned with a mutually constituted *Enlightenmêtis* for living in the mythic dimensions of this bioregion's cycling emanations of the One. Such a climatic intercultural *passage de Toronto* may have the potential to guide myself, other colonists, more recent immigrants and "newly stupid" Native populations into a bioregional experience of Gaia which paradoxically makes the polluted atmosphere of this city both more familiar and mysterious.

At the end of this twelve story pilgrimage I can see the Sun rays of an early Spring morning, a hawk soaring in a smog-filled Summer sky, the noisy Fall arrival of Blue Jays and the bone-chilling cold of an overcast January day as the ever-changing garments of Notre Dame de Highona that emanate from the One. It is She who has mythically mediated this polyphonic response to today's climatic sorcery. Describing polyphonies, Kane explains that their integrity derives from "the assumption that the stories do not belong to the poet", but rather are stored within and "belong to the locale itself".[173] Similarly, Bringhurst states that poetry is an ecological language that humans can "overhear if they are willing to pay attention, and something that the world will teach us to speak".[174] Using the words of Kane, I propose

that the climatic theophany is "not just communicating individually and directly to human beings", but "are in networks of communication with each other, the human listener simply being a part of that network".[175] It is from this experience of Gaia's global and bioregional indeterminism that mythtelling emerges, with those "ecological patterns which elude, or should elude, human manipulation" being "coded as sacred" in stories that "already exist in nature, waiting to be overheard by humans who will listen for them".[176] In Toronto some very new urban rituals of a practical everyday quality will be needed if more people are to become capable of hearing these divine stories that are at present barely audible as they emanate through Notre Dame de Highona. Continually *responding* to Her *apocalyptic* initiation in Toronto and Canada will require the *sharing wisdom* symbolized by a Maple Leaf which grounds Native, colonial and post-industrial cultural knowledges in a twenty-first century climate of unknowing.

Notes

Introducing Acts to a Climate of Unknowing

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Chapter 1: Uncertain Climate for Scientific Wisdom

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Chapter 2: Fuelling America's Climatic Apocalypse

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