

**On the Energy Humanities:
Contributions from the Humanities, Social Sciences, and Arts to Understanding
Energy Transition and Energy Impasse**

SSHRC Imagining Canada's Future initiative
Knowledge Synthesis Grants: Energy and Natural Resources

FINAL REPORT

May 13, 2016

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ON THE ENERGY HUMANITIES

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ON THE ENERGY HUMANITIES

A. KEY MESSAGES

1. A genuine and comprehensive shift in energy usage today requires more than just the adoption of renewable, ecologically sustainable energy sources. Energy transition from fossil fuels to other, cleaner forms of energy also necessitates a wholesale transformation in contemporary petroculture: the political structures, built environments, social dynamics, gendered realities, educational systems, discursive modes, and everyday values, practices, habits, feelings, and beliefs that have developed in relation to and as a result of the shaping force of fossil fuels. The most illuminating and incisive scholarship on energy transition and energy impasse—those social forms and forces that inhibit energy transition—aims to more fully understand and analyze energy as a comprehensive social and cultural relation. The developing field of the “energy humanities” increasingly plays a key role in understanding how energy shapes modern social practices, and so identifies the social and cultural changes necessary for viable energy transition.
2. Three crucial considerations regarding energy impasse and transition involve the role of **Indigenous communities**, the use of **social media**, and the place of **research-creation**. Research in this synthesis project shows that significant gaps exist regarding these topics within current scholarly literatures on the energy question—gaps that will need to be addressed through further primary research.
3. Indigenous communities are among the most deeply affected by the failure to transition to new forms of energy, and they have been among the most powerful advocates for this change. Indigenous philosophies of energy may provide a strong basis for guiding the process of energy transition on a large scale, but much research remains to be done in order to ensure that such guiding work would be accurate, ethical, and respectful of Indigenous communities. The humanities provide several methodologies useful for this work of “Indigenizing energy”.
4. Though social media is widely used to further arguments for and against energy transition, the function and outcome of social media in public debates about energy futures has not yet been adequately analyzed. Corporate interests and other groups aiming to inhibit transition for as long as possible tend to use social media to “narrowcast” their position that technological solutions can enable the continuation of the status quo with respect to fossil fuel usage. On the other side of the spectrum, activist groups seeking to propel transition have employed social media to emphasize the need for socio-political changes to enable viable energy futures.
5. Research-creation fruitfully combines academic and artistic investigations to create a discursive site framed topically rather than along disciplinary lines, thus enabling new ways of approaching the problems of social mobilization with regard to energy transition. Despite the usefulness of this emerging approach for fostering humanities discourse about energy transition, very little material of this sort currently exists. Creating and expanding the category of “energy research-creation” would be one significant step in instigating wide-ranging public discourse on the cultural challenges of energy impasse.

B. EXECUTIVE SUMMARY

What social, cultural and political changes are necessary to facilitate a full-scale transition from fossil fuels to new forms of energy? Making the shift from today's energy systems to new ones will require not only technological developments and public policy innovations, but also significant transformations in the core principles and practices that govern our everyday lives. A founding premise of this SSHRC Knowledge Synthesis Project (KSP), "On the Energy Humanities" (OEH), is that the dominant form of energy in any given era shapes the characteristics and capacities of societies in an *essential* way; energy is a key aspect of the fabric of our social experience, and not just a neutral input that helps run the engines of our economies and societies. Since the advent of the fossil fuel era, societies have shaped and developed their practices, beliefs, expectations and desires around the capacities and capabilities engendered by cheap, energy-rich fossil fuels. Transitioning away from fossil fuels will necessitate a more thorough understanding of the social forces they have unleashed, and an understanding, too, of shifts in social practices that will be important for real and sustainable energy transition.

In addition to providing a fuller picture of the socio-cultural dimensions of *energy transition*, a second aim of this KSP is to understand the many types of *energy impasse* that have impeded and continue to impede energy transition. Here again, our focus is on the socio-cultural aspects of impasse—those habits and practices of being, believing and belonging—that stand in the way of the energy transition we will need to undertake this century as we move to a post-fossil fuel world. For example, physical mobility has become a value connected with both individual and social freedom and autonomy. Citizens of developed countries have come to expect to be able to drive to work and to fly to distant places for vacations or to visit family; citizens of developing countries have come to connect the process of development to (among other things) the expansion of capacity and opportunity for personal mobility. Mobility is prized. Insofar as mobility is deeply connected to fossil fuel use, it is a value that might well impede energy transition. For despite hopes and expectations that technology will allow expanded levels of mobility for an ever-greater proportion of the planet's population *without* the use of fossil fuels (for instance, via electric cars), it is more likely the case that energy transition will require changes to *how* we are able to move about in space, and *how much we want and expect* do so.

The developing field of the "energy humanities" (Boyer and Szeman; Szeman and Boyer) has begun to map the complexities of energy transition and energy impasse. Given that this field is a new one dealing with a large topic that extends across the disciplines, our KSP has:

- (1) engaged in a survey and synthesis of current research in the humanities, social sciences, and arts on the socio-cultural and socio-political dimensions of energy impasse and energy transition; and
- (2) focused on three existing gaps in research, providing a narrative description of the importance of these areas of research, an overview of existing research, and an account of the need for new research in the identified fields.

The three gaps identified by this synthesis project are:

- (a) research on **Indigenous communities**, energy impasse and energy transition;

- (b) specific attention to the role played by **social media** in propelling or inhibiting energy change; and
- (c) contributions made by projects of **research-creation** to the investigation and communication of energy impasse and transition.

(a) Indigenous Communities and Energy Impasse/Energy Transition

Indigenous people have enacted many forms of resistance against modern energy practices, but in addition to this role of objection and critique, Indigenous communities also continue to employ alternative philosophies of energy use that could be crucial models for guiding the process of energy transition on a broad scale. In such a project of “Indigenizing energy,” one significant challenge is finding ways to engage with Indigenous communities and knowledge keepers respectfully so as to maintain community control of Indigenous knowledge and avoid the histories of appropriation and distortion that have plagued past research into Indigenous cultures. While there is already a large body of work by Indigenous creators that is imbued with traditional teachings about the relationship of humans to the environment—in the form of oral stories, literature, nonfiction and film, among other genres—there is a need for much more study of this work in order to better understand the practical and philosophical implications of Indigenous energy cultures. The humanities can play a significant role in this work, by providing the tools for nuanced and culturally sensitive understandings of Indigenous teachings, and by enabling critical self-reflection upon the process of energy transition itself.

(b) Energy Transition and Social Media

The specific role of social media in propelling or inhibiting energy transition remains unclear due to the absence of research about the effects of social media on the public’s perception of energy transition. However, it is evident that groups on both sides of the debate surrounding energy transition are using social media extensively in the attempt to sway public opinion. Despite the gap in research on social media and energy transition, existing studies on the potential of social media to foster change are useful. The concepts of “politics of awareness,” which replace the politics of participation, and “slacktivism”/“clicktivism” are particularly helpful because they point out that social media can limit any real action being taken on either side of an issue. Whether social media is creating any palpable change or not, proponents *for* and *against* energy transition seem to be divided along the lines of sociological and technological frameworks. Activist groups who seek to propel transition often advocate a broader socio-political understanding of what energy is and does. However, industry and interest groups who seek to inhibit this transition, but still acknowledge that some form of transition is necessary, repeatedly argue for a technological solution that will allow the continuation of current energy industry practices and whatever economic benefits these allow. This is a *strategic* misreading or misunderstanding of what energy is for and what it does on a socio-cultural level. Despite the strategies employed by those seeking to inhibit transition, the sociality of social media appears to favour the framing of the discourse of energy transition within a socio-political context.

(c) Research-Creation and Energy Transition

The hybrid category of research-creation engages the issues of energy transition and impasse through the integration of intellectual and artistic practices. Although SSHRC and other agencies have a vested interest in research-creation projects, our investigation has revealed a dearth of such projects dealing with energy transition. Nevertheless, the material that does exist reveals a narrative and aesthetic conflict about how energy production and petroculture are represented. While energy corporations and others resistant to energy transition depict energy as an abstract element of the economy, proponents of research-creation projects provide strong counter-aesthetics and narratives. Examples of research-creation in photography, film, literature, and collectivist art press the issue of energy transition by presenting current energy production as harmful and alienating. Curation of research-creation projects dealing with energy has become a site of connection for a range of artistic practices. These projects represent some of the earliest critiques of petroculture and facilitate future, wide-ranging discussions of energy transition and impasse. Just as “energy humanities” is emerging as a unique category of investigation between and across ecology, environmentalism, and activism, “energy research-creation” provides a framework to integrate academic and artistic practices surrounding energy transition. Research-creation may currently be a significant gap in our knowledge about energy transition, but it is also a site of great potential to increase the visibility of the cultural discourse around energy.

SSHRC’s “Imagining Canada’s Future” initiative poses a key question for researchers across the humanities and social sciences to address: “What effects will the quest for energy and natural resources have on our society and our position on the world stage?” As our findings in each area of the following research synthesis will indicate, “On the Energy Humanities” has focused its energies on the first part of this question in particular. Within this overarching larger question, our synthesis project has paid attention more specifically to sub-questions (b), (c), (d) and (g) (drawn from the text of the KSG competition call):

- What could be the cultural, social, economic and environmental impacts of disruptive technologies for accessing and developing natural resources (e.g., fracking, deep-sea drilling, drones, genetic modification)?
- How can Canadian natural resources be developed in such a way as to respect the rights, experiences and aspirations of Aboriginal Peoples; create sustainable benefits for Aboriginal communities, entrepreneurs and businesses; and encourage reconciliation and positive engagement between Aboriginal and non-Aboriginal Canadians?
- What effects might the development—or halted development—of Canadian energy, natural resources and alternatives have on governance and regulatory systems, public opinion, the economy and decision-making? *and*
- Historically, how are Canada’s values and cultures linked to its natural resources, and how might upcoming changes affect these, including as reflected in the arts and literature?

C. KEY FINDINGS

Context

The humanities have participated in the analysis of environmental and climate issues during the entire course of modern engagement with them (usually dated to the publication of Rachel Carson's *Silent Spring* in 1962)—and, indeed, at earlier moments in human celebrations of and concerns about nature and the environment as well (from Romanticism to American transcendentalism). Environmental humanities and the practice of ecocriticism were already well enough developed by the mid-1990s to merit the publication of the (now near-canonical) *Ecocriticism Reader* edited by Cheryll Glotfelty and Harold Fromm; the field has grown ever since, with associations, conferences, and journals created to support research on a burgeoning range of themes and topics.

At one and the same time, the primary task of the environmental humanities is to draw attention to those texts and cultural practices that engage with the environment in a more direct fashion than others (e.g., varieties of eco-lit, environmental cinema) *and* to insist on the pressures and realities of the environment and the significance of the human-culture nexus for *all* cultural texts and practices (see, for example, Morton *Dark*). Both emphases constituted missing dimensions of post-WWII cultural criticism that have now become as firmly entrenched in critical practice as other critical-theoretical interventions into humanistic thought (from postcolonial criticism to feminist theory). At the heart of the environmental humanities is the insight that anything and everything deemed *natural* is, of necessity, *cultural*; how we frame our relation to the natural world and the environment is expressed linguistically (through terms and concepts that explain and name it), is culturally contingent, and changes over time. As a consequence, any attempt to address the now dangerous and damaging impact of human social practices on the environment requires a greater cultural understanding of the causes, motives and consequences of these activities, in addition to scientific insights and understandings of (for example) CO₂ levels and shifts in global temperature of the kind produced (with ever greater certainty) by the Intergovernmental Panel on Climate Change.

A new dimension of the environmental humanities that has emerged over the past decade is a mode of critical investigation that has recently come to be called the “energy humanities” (Boyer and Szeman; Szeman and Boyer). Research in the energy humanities has spanned the range of disciplines and institutional practices that make up the arts, humanities and social sciences. Historian Timothy Mitchell's *Carbon Democracy* (2011), for example, examines the ways in which the Keynesian model of growth depended fundamentally on a cultural understanding of oil as an inexhaustible, inexpensive resource. Cultural critic Stephanie LeMenager's *Living Oil: Petroleum and Culture in the American Century* (2013) constitutes a rich archive of the omnipresence of petroleum in daily life and the way in which energy shapes affect, belief and belonging. Another book on the “American way of life,” geographer Matthew Huber's *Lifeblood: Oil, Freedom, and the Forces of Capital* (2013), traces in detail the multiple ways in which an existence organized around property, mobility and entrepreneurship is linked directly to the presence of cheap and seemingly inexhaustible forms of energy. These are only a few of the most prominent texts in the field; an even larger number of non-academic non-fiction texts have investigated the role of energy in relation to the environment and have speculated about topics such as the likely political and economic consequences of peak oil (Berners-Lee and Clark, Chastko, Deffeyes, Heinberg, Homer-Dixon, Marriott and Minio-Paluello, Marsden, McNeish and Logan, Monbiot, Roberts).

The contributions from the energy humanities are not limited to texts. Over the past decade, a large number of films have also critically examined our relation to energy, including video artist Ursula Biemann's *Black Sea Files* (2005) and Josh Fox's controversial *Gasland* (2010). In the visual arts, Edward Burtynsky's photo-essay *Oil* (2011) and Marina Zurkow's video installation *Mesocosm* (2012) have joined major exhibits such as *The Oil Show* (2011) in interrogating civilizational dependence on a single source of energy. While there have been research and artistic projects that have previously examined the significance of energy (and of oil and gas in particular) for human societies (the work of historian David Nye on the establishment of electricity networks is an important example of such work), the explosion of projects in the past decade devoted to understanding more fully our relationship to and dependence on oil indicates a new interest in the specific role of energy in society and its significance for environmental concerns.

These texts and scholarly context provide the overarching framework for our knowledge synthesis of scholarship in the emerging field of the energy humanities on *energy transition* and *energy impasse*. These two concerns lie at the centre of the current research; their significance will continue to intensify as a result of the pressing need to address global warming and its principal cause: the ever-increasing use of fossil fuels. The cross-disciplinary coordinates of the energy humanities indicate the broad significance and promise of work in this field for researchers and teachers in a whole host of academic disciplines, and for audiences both inside and outside the academy. The very scope of these same coordinates will also help to measure the significant challenge of mapping and synthesizing the innovations and initiatives in the energy humanities. Put starkly: the newness of the field and the disciplinary diversity of contributions to it, when coupled with the urgent nature of the energy issues at stake, make the project of synthesizing knowledge here every bit as complicated as it is pressing.

Implications

The work of surveying and synthesizing current research in the humanities, social sciences, and arts on the socio-cultural and socio-political dimensions of energy impasse and energy transition holds far-reaching significance in a wide range of arenas—from academic research and training to education and curriculum design to policy-making and public awareness. This knowledge-synthesis project will make vivid and compelling to a variety of audiences the necessary insight that energy is key to the fabric of our social experience, not just a neutral input helping to run the engines of our economies and societies. It will also illuminate the kinds of impasse that presently impede energy transition, and it will indicate best practices, as advanced or implied by research in the energy humanities, for overcoming such kinds of impasse. With the identification of gaps in existing research—specifically with regard to Indigenous communities, social media, and research-creation vis à vis energy impasse and transition—this knowledge synthesis identifies important, even urgent areas for future research. As importantly, it points toward perspectives and methods (in Indigenous ways of knowing; in applications of social media; in practices of research-creation) that offer all publics within and beyond Canada transformative ways of working through energy impasse and pursuing energy transition.

Approach

Our method for synthesizing knowledge—and addressing gaps in knowledge—in energy humanities scholarship has involved four steps. First, we assembled a working bibliography of resources in energy humanities, using all major databases relevant to disciplines in the

humanities and social sciences (notably Project Muse, EBSCO and JSTOR) in order to produce a historically expansive, disciplinary capacious literature review. Next, we endeavoured to map the coordinates of our bibliography, sorting materials into three areas (literary and cultural studies; history and political studies; philosophy) detailed below. We then undertook a careful examination of these materials in order to consolidate our understanding of the three key gaps addressed by our knowledge synthesis. Finally, working as three separate teams, we generated narrative accounts of these gaps in existing knowledge designed to establish parameters and directions for future research. The division into teams facilitated the synthesis of research and narration of gaps; it will account for small variations in approach, framing, and voice in the substantive narrative sections below.

Results

I. ON THE ENERGY HUMANITIES: IMPASSE AND TRANSITION

Just what constitutes the energy humanities? What does it do to add “energy”—thereby assigning more significance to energy than other practices, inputs and outputs—to the mix of the critical approaches to the environment already established within the environmental humanities? Like other researchers and research-creators committed to environmental criticism, energy humanists insist on the fact that environmental dilemmas are fundamentally problems of ethics, habits, values, institutions, beliefs, and power—all traditional areas of expertise of the humanities and humanistic social sciences. They also believe, however, that energy has played a specific, hitherto under-explored, and consequently not well-understood role in shaping the values, habits and beliefs that have generated the current human-environment relationship.

Energy has played a key role in shaping culture and society especially since human communities began to use petrocarbons to an ever-increasing degree, first through the addition of coal in the expansion of industrial capitalism in Northern European, and then via the global expansion of economies and populations through the extensive (if globally uneven) use of oil and gas. Historian Dale Jamieson has recently claimed “that the story of human development has been the story of the increased use of energy. Indeed, we can even think of human history as falling into epochs marked by the human ability to exploit various sources of energy” (16). For those who want to understand the past and present configurations of the human relation to the environment, and who want to do so in part to enable a significant change in this relationship so as to address the climate crisis, focusing on energy can help to identify a key, material component of human development that, while foundational to the form and character of human societies, is only now beginning to be seriously investigated.

It might well seem obvious that energy should be an important part of the critical and analytic element of the environmental humanities. After all, the transformations that have taken place in the forms and levels of energy employed by human societies have been substantial, as have the broad changes in cultural and social practices produced as a result. Over the century from 1850 to 1950, as a percentage of total work output, the use of fossil fuels went up from 6.8% to 90.9%, while animal labour decreased from 52.4% to 0.7% (Renshaw). This massive increase in fossil fuel use (which has expanded more intensively and extensively from 1950 to the present; see McNeill) was accompanied by major infrastructural and social changes—changes in how people lived *and* what they expected, anticipated and desired in the places where they lived. To give but one example of this: the widespread adoption of automobiles reshaped the urban form and infrastructure of the nineteenth-century city around highways and led to (among other things) the creation and expansion of modern suburbs and exurbs. It also introduced a

change in social and individual values, beliefs and expectations. John Urry claims that “car culture has developed into a dominant culture generating major discourses of what constitutes the good life and what is necessary to be a mobile citizen in the twentieth century” (117). Fossil fuel societies are ones in which mobility has become a value associated with being a modern individual *per se*: to be modern is to be able to travel for work and pleasure in an increasingly intensive and extensive way. Urry insists that we push the connection between cars and subjectivity even further: “so all-embracing is automobility as a system that we can suggest that civil society in most countries should now be conceptualized as a civil society of ‘car-drivers’ and ‘car-passengers’” (130).

We have tended to view the multiple shifts and changes of modernity as ones in which it is political and social developments that have actualized the dream of Enlightenment maturity outlined by Kant: the present is measured against the past, with the difference named as “progress”; changing conditions, attitudes, and ways of life, including individual and social emancipation, are narrated as the consequence of novel ideas combined with new structures of the social. The insights of the energy humanities hope to complicate this picture of modernity through an insistence on the role of the expanded availability of energy in this story of progress. Like Urry, energy humanists want to identify modernity as an *oil modernity*, and to name contemporary subjects as *oil subjects*—creatures and societies that are what they are not only (or even primarily) due to changes in ideology, emancipatory struggles, or technological developments, but because of changes in access to energy—massive ones in the case of the full shift to petrocarbon societies that began in the mid-1900s.

“Energy systems are shot through with largely unexamined cultural values, with ethical and ecological consequences,” writes LeMenager in *Living Oil* (4). If there has been an increasing focus on energy within the environmental humanities over the past decade, it has been in large part because the characteristic mode of thinking about energy has to date been *not having to think about it*; one of the characteristics of our oil modernity has been the privilege of taking energy for granted, despite (or perhaps because of) its importance in shaping every aspect of the modern experience. Especially in oil societies, the historical and social significance of energy has everywhere been hidden in plain sight. During most of oil modernity, energy appeared to be virtually free (Mitchell, Rubin) and so did not have to be figured as significant even in economic calculations.

This is not to say that there were no costs associated with the exploration for oil, or that the struggle to control energy resources didn’t shape political decision-making and military (mis)adventures (see Yergin *Prize*, Yergin *Quest*). However, the ready-to-hand availability of energy was such that its broad significance for society went unnoticed, constituting, for instance, a notable black hole in the cultural production of a society dependent on a single energy source as never before (Wenzel). The critic and novelist Amitav Ghosh famously laments the absence of U.S. fictions addressing oil culture or the American role in (and dependence on) the Middle East, while Patricia Yaeger notes that the characters in Jack Kerouac’s *On the Road* never “worry about how much fuel they’re using or the price of oil... [oil] seemed as naturally there, as American, as the apple pie and ice cream Paradise eats ‘all the way across the country’” (306). The recent cultural and scholarly attention to energy emerges at least in part from its increasing social and economic visibility. As a resource that is no longer imagined as being endlessly available, and one whose use generates climate consequences that are becoming part of our quotidian reality, oil (and energy more generally) is becoming an object of concerted inquiry by humanities researchers eager to understand how and why we have been shaped by the resources

that we make use of, just at the moment when we must extricate ourselves from them.

By focusing on the way that energy has shaped who and what we are, existing work in the energy humanities informs questions about energy transition—the practices and beliefs that will need to change in order for us to shift away from fossil fuels—and energy impasse—those practices and beliefs that get in the way of this shift. Existing research in the energy humanities falls into three broad categories, which we have used to organize our bibliography of resources in this emerging research area.

(1) *Literary and cultural studies*

The question of energy has, until recently, been one that scholars in literary and cultural studies have not thought to ask. While any number of explanations may account for this oversight, two in particular seem notable. The first is a matter of periodization: the received eras of literary history do not correspond so readily to the ages of energy. The second, meanwhile, is a matter of aesthetics: understood as pure input—only *techné*—energy would seem to have no aesthetic dimension or significance whatsoever.

An emerging body of scholarship that endeavours to reckon the history and aesthetics of energy alongside literature has tended to take as its point of departure a now-seminal essay by the critic and novelist Amitav Ghosh, “Petrofiction,” in which he coins the generative concept serving as his title while at the same time analyzing the cultural poverty he associates with “the muteness of the Oil Encounter” (30). Subsequent commentators have sought to give this encounter voice in its literary and cultural instantiations, including among others Peter Hitchcock, Graeme Macdonald, Allen MacDuffie, Daniel Worden, Jennifer Wenzel, and Patricia Yaeger. The significance of energy systems for the study of literature continues to be developed; as its importance for the study of culture more broadly has been easier to establish, this area of research has developed somewhat more quickly (Barrett and Worden, Buell, Hoffman, Lord, Morton *Hyperobjects*; Morton *Dark*).

(2) *History, Society and Politics*

There is a significant existing body of academic research devoted to the study of the history of energy and of fossil fuels specifically (Hecht, Christopher Jones, Nye, Yergin *Prize*, Yergin *Quest*). There is also a large body of work on the politics of oil, especially in relationship to U.S. geopolitics and U.S./Western involvement in the Middle East (Klare) and on fossil fuels in relation to the politics of environment. Rather than engage in a survey of every work touching on energy and fossil fuels in studies of history, society and politics, we attended to work in this category that focuses on the foundational role played by energy systems in shaping human social practices.

In accounts of the social function of specific forms of energy (e.g., fossil fuels), history, politics and sociality fold together. Dipesh Chakrabarty’s groundbreaking “The Climate of History: Four Theses” develops a new historiography in relation to the category of the Anthropocene that figures fossil fuels as foundational to modernity. Similar re-narrations of history that produce new insights into form and direction of politics and society include the work of Jean-Claude Debeir, Jean-Paul Deléage and Daniel Hémerly; Bob Johnson; Astrid Kander, Paolo Malanima, and Paul Warde; Naomi Oreskes and Erik Conway. A foundational work of energy humanities, Timothy Mitchell’s *Carbon Democracy*, pairs the exploration of the history of fossil fuels with a re-narration of the development of neoliberal state power. In *Fossil Capital*, Andreas Malm provides a history of a previous energy transition—the one away from watermills

to steam power—in order to understand the formative role played by energy in the development of capitalism. The studies on which we have focused in this category do not simply take energy as a subject for history (one among many), but foreground energy as fundamental to shaping human history, politics and society.

(3) *Philosophy*

As a subject of inquiry, energy has been as absent in philosophy and critical theory as in other fields of humanistic analysis. For those who have taken up oil as a subject of philosophical inquiry, oil is commonly investigated as a key element of modernity—indeed, it is most often treated as the *ur*-commodity that has helped fuel and enable modern technological society and shape many of the key concepts that animate it. Of importance to the majority of philosophical approaches to oil is philosopher Martin Heidegger's idea of "standing-reserve". "Standing-reserve" describes a world re-written into instrumentality: everything is now good *for* something rather than a good in itself. Energy has almost always been treated this way: as what makes an instrumental world function, as the ghost that animates the machine of modernity.

Key philosophical studies involving energy include Jane Bennett's *Vibrant Matter: A Political Ecology of Things*, Timothy Morton's *Hyperobjects: Philosophy and Ecology after the End of the World* and Sheena Wilson's discussions of petro-feminism and petro-intersectionality (Wilson "Gendered," "Gendering," "Petro-Intersectionality"). These thinkers—and others like them—draw attention to the epistemological gaps and limits of our current philosophical systems when it comes to making sense of energy, global warming and ecological change, and make the case for the need for new forms of ontology and ethics. Of particular note is Allan Stoekl's *Bataille's Peak: Energy, Religion, and Postsustainability*, which refigures Georges Bataille's philosophical anthropology concerning expenditure and sociality. "There is virtually no point any more in trying to work out a critique of modernity: depletion does it for us, relentlessly, derisively, definitively," Stoekl writes; "what is imperative is an awareness that any economy *not* based on the profligate waste of resources (commonly called a 'sustainable' economy) must recognize and affirm the tendency to expend, indeed be based on it" (189).

II. STATE OF CURRENT KNOWLEDGE AND GAPS IN RESEARCH

Existing research on energy is quickly expanding across the humanities and social sciences. One of the key opportunities provided by this grant has been to search for studies in areas in which we would expect to find research in the energy humanities, but which have not featured to date in the core group of texts that has come to define the field. Our focus in this project has been to illuminate work in three areas of research—areas that we would expect to have generated significant research given their relationship to contemporary developments in energy. Our intention here is to identify and analyze existing research in these areas, and to advocate for the importance of these fields of research in the on-going development of the energy humanities.

(a) Indigenous Communities and Energy Impasse/Energy Transition

As Indigenous histories will demonstrate, energy transition does not only name a future imperative. For most, if not all, Indigenous peoples have already experienced a recent energy transition: from the energy practices associated with their traditional ways of life to the ones that have been thrust upon them during the ongoing process of colonization. In some cultures, such as the Inuit's, this transition has happened within the current generation. While many Indigenous people have adapted to some aspects of Western energy practices, especially technologies of transportation such as snowmobiles, outboard motors and automobiles, in other ways their experience of this energy transition has been generally negative, because of the ways in which modern energy extraction and distribution have affected Indigenous people's relationship to the land. Hydroelectric dams, oil and gas extraction, uranium mining, petroleum pipelines and other modern energy infrastructure have all had disproportionately damaging effects upon Indigenous communities in comparison to non-Indigenous populations. In many cases, energy developments have interrupted or severely curtailed Indigenous people's ability "to be on the land," which is a crucial part of virtually all Indigenous cultures, philosophies and spiritualities. Indigenous people have also been particularly vigilant about pointing out the environmental damage caused by energy extraction and delivery. In some Indigenous cultural traditions this damage is even seen as a kind of ethical and spiritual transgression—a "sin against nature" (*Spirit* 77), as Cree Elder Louis Bird has said.

Thus, it is not surprising that a large number of Indigenous people from across North America (and beyond) have taken actions to resist this energy transition that has been forced upon them through the process of colonization. In this resistance, their interests go far beyond the immediate concerns of their communities and territories, gesturing instead toward a more general or even a global vision of an ethical and mutually beneficial relationship with nature. Indigenous activists and community members have been among the first people to recognize the environmental damage to which current energy practices are leading. One reason for this sensitivity and awareness is that they are familiar with their own traditional energy practices that are far less damaging to the environment.

The world is beginning to catch up with the thinking of Indigenous people who have advocated for a transition away from the energy practices of modernity and back toward Indigenous values of connectedness, reciprocity, and respect for the natural world. Prime Minister Justin Trudeau presented what has become a common sentiment in his remarks at the 2015 Climate Conference in Paris when he said, "Indigenous peoples have known for thousands of years how to care for our planet. The rest of us have a lot to learn. And no time to waste" (Thestar.com/Canadian Press). This statement, coming from a head of state, is a remarkable admission that the current model of energy use is not working, and that traditional Indigenous

models are preferable. The suggestion here is essentially that the world should transition toward an *Indigenized philosophy of energy*, perhaps in a way that is analogous to some recent attempts to Indigenize Canadian institutions of higher learning. However, there is a great deal of work to be done to unpack the implications of this idea of Indigenized energy. How will such learning happen? What are the political and ethical stakes in such a project? Will Indigenous communities retain control of their own philosophical and spiritual traditions if those are also utilized on a global level? Is it even possible for intensely localized Indigenous philosophies and practices to be applied on a national or global scale? Will Indigenous environmental philosophies be co-opted or distorted in such a project?

Despite these difficult questions, there is clearly a great deal of value to be gained from studying Indigenous energy practices and philosophies, because they represent a cultural approach to the problems of contemporary energy impasse, rather than a purely technological approach. One of the most crucial aspects of the coming energy transition is the need for a change in cultural values and practices—and Indigenous cultures provide time-tested models and teachings that may be very useful guides for such change. Humanities-based studies of Indigenous cultures will also be extremely valuable in such work, since the humanities focus naturally upon cultural and political issues. Humanities research can help us to approach Indigenous energy-related teachings in culturally sensitive ways, and can aid in the understanding of philosophical, spiritual and political nuances of these ideas and practices.

a.1 *Indigenizing Energy and Energy Precarity*

Indigenous communities could have a significant role to play in the coming energy transition, by virtue of their understandings of alternative energy practices and beliefs. Instead of being largely the victims of modern energy extraction and distribution projects as they are today, they could provide the guidance for new and more environmentally responsible relationships to the natural world. Such a change in the role of Indigenous people would require rigorous attempts to understand and redress the marginalization—ideological and physical—of Indigenous people within the history of colonialism and within the current energy structures of modernity. In other words, inviting Indigenous people to offer their valuable teachings to the world would also require reciprocity in this relationship, and a serious commitment to fixing the many problems that colonialism has brought for Indigenous communities. It would also require that Indigenous people and philosophies be taken seriously as practical and highly developed modes of thinking, and not simply as window-dressing or as stereotypical invocations of “the environmental Indian.”

Is *Indigenizing energy* a viable goal for future energy policy and everyday practices in Canada and beyond? It is certainly worth deeper investigation. Indigenous cultures offer alternative models of energy production and use, models that have been tested over many generations. Indigenous thinkers and activists have been thoughtful, passionate and often accurate critics of the current state of energy thinking in colonial modernity. Indigenous people also generally have a long-term vision for the future of their communities, one that draws from past traditions, which means that traditional teachings might potentially adapt well to a broad context, even a global one. There will certainly be some problems with adapting very specific land-based teachings into the global cultural milieu—for example, hunter-gatherer practices will probably not “scale up” to the size of the current global population. However, given the paucity of other tried-and-tested alternatives, and the urgency of the current environmental crisis, it will be worth the effort to engage with Indigenous Elders, artists and other thinkers who will bring a

valuable perspective to the discussion about how best to move beyond the current energy impasse.

Another important implication of this work is for Indigenous communities themselves, many of which are in precarious positions in relation to contemporary energy practices. Indigenous people are often the ones most directly affected by energy megaprojects, through their exposure to flooding, air and water pollution, shoreline erosion, and general loss of territory. Contemporary energy infrastructure presents an enormous challenge to Indigenous sovereignty and the free access of Indigenous people to their land. This limiting of access to land is not merely a practical problem in terms of livelihoods and free movement, but also directly threatens Indigenous cultural values that are inherently tied to the land. If the water becomes unproductive due to shoreline erosion after a dam is built or to leeching contamination from tailings, the results affect not only the livelihoods of the Indigenous fishermen but also the community's spirituality and their very identity as Indigenous people. Thus, any work that can be done to move toward energy transition and away from the status quo will be important in guaranteeing the future of Indigenous communities on the land.

In addition to those Indigenous communities that are threatened by proximity to energy megaprojects, many other communities face a different kind of energy precarity because of unreliable or unsustainable access to modern forms of energy. These communities have been connected to colonial energy infrastructures, but often in tenuous ways. For example, many remote communities rely upon diesel generators to power their electricity grids, and this diesel must be trucked in over winter roads—roads that are vulnerable to climate change. In many places, petroleum-based fuels are exorbitantly expensive and are in short supply due to the challenges of transporting them. In other places, Indigenous people living near hydroelectric dams (installations that have flooded their land and threatened aspects of their livelihood and culture) are forced to pay extremely high electricity rates, which discourages economic activity and further impoverishes an already economically marginalized population. Because of these additional negative consequences and risk factors, Indigenous communities would see immediate benefits from a transition toward energy practices that are Indigenized. Enabling Indigenous communities to have more control over their own energy futures would be the first step in an energy transition that may also provide a valuable example for non-Indigenous communities.

a.2 Humanities and Indigenous Knowledge

There is a significant body of work within humanities disciplines that engages with Indigenous critiques of, and resistances to, the energy practices of modernity. Much of this work focuses upon particular Indigenous acts of resistance to existing or planned energy infrastructure projects such as pipelines, hydroelectric dams, oil extraction facilities and uranium mines. Documentary films as well as novels about this subject usually focus on one energy megaproject or one particular Indigenous blockade or campaign of resistance—and interpretations of these works have generally emphasized the role of Indigenous people as critics and objectors.

While such critique is undoubtedly important, it is only one part of the picture. Rather than focusing solely on what Indigenous people say is *wrong* with the status quo, it is important to have more detailed and nuanced analysis of Indigenous traditional beliefs and practices that may provide valuable principles for guiding the necessary energy transition that is to come. In this area—the study of traditional Indigenous teachings about energy—there has been less academic work to date. However, this field is ripe for further analysis. There is a large body of relevant texts, recordings and traditional oral stories by Indigenous Elders from different cultures

and communities across Turtle Island, all of which merit a great deal of further study to better understand the energy-related teachings they embody. These works are only beginning points for the study of Indigenous energy philosophies and practices, which will of course be tied to specific territories, histories, and oral traditions, but they are indeed crucial places to begin this process. Indigenous activist writers and critics such as Jeannette Armstrong (“Constructing Indigeneity”), Winona LaDuke (*Recovering the Sacred*) and Leanne Simpson (*Dancing*) have also written nonfiction works about Indigenous environmental thinking that are not explicitly about energy, but that can nonetheless be understood as important explorations of Indigenous teachings about energy. Furthermore, there is still more work to be done studying existing Indigenous artworks such as novels, plays and films for their positive expressions of Indigenous environmental philosophies, rather than mainly for their criticisms of colonial energy paradigms.

Humanities-based approaches to these ideas and practices offer several advantages in this process. The problems of energy impasse and energy transition are not solely, or perhaps not even mainly, techno-scientific. They are cultural. How will humans effect the necessary changes to their ways of life in order to avoid serious negative consequences on a global scale? The technical and scientific challenges are great, but the cultural ones are at least as large. Energy transition will necessarily involve cultural transition, and the humanities provide an excellent set of tools for analyzing and even shaping culture. In the specific case of Indigenous cultures, the humanities provide multiple ways of approaching these subjects and communities in nuanced, respectful and critically engaged ways. This is not to say that the humanities are perfectly attuned to Indigenous modes of thinking, or that they are immune to the kinds of research biases and unethical practices that have long plagued Indigenous peoples’ relationships with academic research (Smith). However, within the contemporary intellectual landscape of the humanities, there are now several important streams of thought that have supported and encouraged Indigenous sovereignty and the Indigenization of contemporary North American culture (Findlay; Mihesuah). Likewise, Indigenous feminist theories and approaches are making valuable contributions to energy and environmental discussions, as well as to a more nuanced understanding of what is required to transform existing knowledge production systems, including the academy, which are complicit in the perpetuation of not only colonial but heteronormative patriarchal worldviews (Altamirano-Jiménez; Suzack). Movements to decolonize and Indigenize our universities, and the practice of research in particular, have developed within the humanities, in disciplines such as Indigenous Studies, Literature, History, Cultural Studies, Ecocriticism and more. In any attempt to Indigenize contemporary energy practices, the humanities will be able to provide nuanced cultural analysis, reflections on ethical engagement and Indigenous sovereignty, and creative responses to the many problems that arise. Much of the work in our Energy and Indigeneity bibliography has already begun this task, or has set the stage for further work that will more specifically engage with the subject of energy within the broader context of Indigenous environmental philosophy.

In addition to this humanities work, a significant body of research on Indigenous Traditional Ecological Knowledge (TEK) has developed in the disciplines of Resource Management and Biology since the 1990s. TEK seeks to understand and apply Indigenous principles of environmental stewardship, especially in relation to contemporary industrial developments within Indigenous territories. TEK researchers have spent time on the land with Indigenous Elders and other community members, learning about traditional teachings that are relevant to maintaining the health of the land. TEK research has also sometimes focused on specific ways of mitigating the damage of industrial activities in particular Indigenous contexts.

This work has made significant steps toward Indigenizing particular practices of local land-use management, especially in the forestry industry but also in energy extraction industries. TEK research methodologies have created a significant place for Indigenous community involvement in research as well as in specific industrial projects and infrastructure development. However, Anishinaabe TEK researcher Deborah McGregor has pointed to some potential limitations of this approach, writing “TEK research and implementation in support of sustainable development is arguably another form of colonialism” (“TEK and Sustainable Development” 74). In saying this, McGregor suggests that utilizing TEK research in the service of a Western agenda such as “sustainable development” is not necessarily the best thing for Indigenous people, and is in fact not a true application of Indigenous principles but instead a continuation of colonial appropriation. Her call for a broader, more decolonized approach to Indigenous environmental philosophies is one that could be productively examined through the tools of cultural analysis offered by the humanities. No discipline is immune to the critique of colonial appropriation, but a combination of humanities-based analysis with TEK and its on-the-ground form of Indigenous research would create a powerfully flexible and useful model. To date, there has been little collaboration between TEK researchers and those in the humanities, but such work will likely prove very fruitful.

What the humanities can bring to the analysis of Indigenous cultures and energy transition and impasse is a mode of investigating the large philosophical, political and ethical issues of energy use and creation as they exist within Indigenous contexts. This has already been achieved to some degree through the critical, creative and documentary work that is included in our bibliography. However, much more work remains to be done in the process of relating Indigenous knowledge to the broader global context of energy impasse and energy transition. The goal of indigenizing energy, if it is to be taken seriously, must begin with a deeper engagement with Indigenous cultures and the holders of Indigenous knowledge.

(b) Energy Transition and Social Media

Social media represents an ubiquitous, far reaching communication venue that impacts the daily lives of many. As of 2012, 67% of Internet-using Canadians reported using social media sites such as Facebook or Twitter (Statistics Canada n.p.). That number has likely increased since. Furthermore, like more traditional media outlets, social media shapes and otherwise impacts audience or users' behaviours and imaginaries, however nuanced those impacts may be. But what role does (or can) social media play in propelling or inhibiting energy transition? Can we claim that—is it even possible to determine whether—social media is propelling or inhibiting energy transition? Consideration of the myriad social media efforts from both industry and social or environmental activist groups reveals that there are conflicting and competing voices addressing energy transition in Canada through social media, and further that there is no clear, dominant narrative or set of narratives circulating through these channels. Both those who have stakes in inhibiting or delaying transition and those who have stakes in propelling it leverage social media—including popular networks and services such as Facebook, Twitter, and YouTube—to disseminate their messages and, importantly, to garner public participation in the circulation of messages as a means to their respective ends. At the core of our inquiry into social media and energy transition/impasse is what social media does (or does not) make possible.

Media has long played a role in shaping our understanding of and relation to energy, and the broad social imaginaries that energy makes possible. This influence includes everything from radio, television and print media ads intended to garner public support for oil extraction companies to advertising used to support the ways of life that fossil fuels animate (the most obvious and prevalent of the latter is automobile advertising). Canadian fossil fuel companies continue to use regular media to distribute their message about the importance and significance of their operations, including ads designed to ease public fears about the environmental impact of the oil sands. Industry associations such as the Canadian Association of Petroleum Producers have also made use of print and TV ads. Finally, some organizations opposed to the continued (much less expanded) extraction of fossil fuels, such as Greenpeace, have used traditional forms of media to raise public awareness, including direct mailing of information in addition to ads on regular media. As the Internet becomes a more and more important medium of communicating with publics, all groups concerned with fossil fuels have begun turning to social media.

Research on the role that social media plays—or *could* play—in energy transition is virtually nonexistent. Given the significant role that social media currently plays in the everyday lives of many, such a gap in research and knowledge is worrisome, precisely because of the potential of social media to be used for propelling energy transition. Despite this gap, however, scholarship that examines the broader relationship between social media and change is instructive here. Studies of the broader political potential of social media sometimes lapse into a kind of technological determinism that suggests that social media's supposedly inherent democratic characteristics will ultimately enable an unrivalled form of participatory politics. For example, many essays in B. D. Loader and D. Mercea's *Social Media and Democracy: Innovations in Participatory Politics*, especially Tamara A. Small's essay "What the hashtag? A content analysis of Canadian politics on Twitter," as well as Elisabeth Soep's *Participatory Politics: Next-Generation Tactics to Remake Public Spheres* uncritically reproduce this narrative of liberation. More critical studies reveal the ways in which the Internet's potential to instigate collective action is stifled by what could be termed a "politics of awareness," a politics in direct contrast to the notably more active notion of a politics of participation. As Manuel Castells points out, "the media are essential in the process of awareness raising, and a number of

journalists have invested themselves, professionally and ideologically, in the project of raising environmental consciousness” (318). Rather than cleanly enabling or initiating widespread activism, the limit of social media’s effectiveness to spur action is located within the very limits of awareness and recognition and indeed the ability to measure the outcomes of social media use more generally.

Measuring the outcomes or effects of social media in terms of behaviours or beliefs is a difficult task, due in no small part to the inherent complexity in accurately determining how media affects a broader population, especially when considering the historically unparalleled level of media convergence that characterizes contemporary networked society. Viewed from this angle, the capacity of social media to spur action or changes in behaviour—whether *for* or *against* energy transition—is contentious. To underscore this ambiguity in how social media affects behaviour in the context of activism and change more generally, vocabularies have been deployed recently to distinguish between the types of activism inspired in online contexts and other, purportedly more legitimate contexts. Jodi Dean’s work on what she calls “communicative capitalism” underscores the limitations of these communication technologies in stimulating positive social and political change in any capacity. For her, communicative capitalism “designates the strange convergence of democracy and capitalism in networked communications and entertainment media” (4). This convergence illustrates precisely why claims to social media’s effectiveness at stirring up political action are so tenuous.

Terms such as “slacktivism” or “clicktivism” (buzzwords though they are) effectively signify the ways in which the kinds of passive participation promoted through new and social media fail to measure up to their active, “real-world” counterparts. Summarizing Evgeny Morozov’s work on the subject of slacktivism, Henrik Serup Christensen defines the term as that which “refers to political activities that have no impact on real-life political outcomes, but only serve to increase the feel-good factor of the participants” (n.p.). Christensen opts for problematizing slacktivism with a notion of “virtual activism,” establishing a spectrum that could be useful in approaching efforts to leverage social media to either inhibit or propel energy transition. But even the metric of “virtual activism” is a slippery one, as Christensen emphasizes. Such a paradigm—between slacktivism and virtual activism—is a significant framing device in the context of how social media shapes behaviours and imaginaries regarding energy transition because the notion of energy and its role in society is tied to larger hegemonic behaviours and imaginaries and at the core of energy transition is the notion of *change*. What’s important for our larger questions here, though, is that while there may be no dominant energy transition (or anti-energy transition) positions circulating through the channels of social media, a range of opposing discourses—discourses that either hope to propel transition or inhibit it—seem to vie for the public’s attention and participation regardless of the proven efficacy of social media in translating to more material forms of action or behaviour.

Of the work that does comment on social media and energy at all, the most explicit treatments are framed in terms of the role that social media can play in shaping individual energy consumption (e.g. Castri et al.; Heinonen; Lehrer and Vasudev; Lehrer et al.; Petkov et al.). Much of this work is in the form of conference papers and presentations, which perhaps signals a future trend in scholarly attention. The energy consumption habits of individuals are certainly a significant and important locus of study regarding energy transition when one looks, for example, at studies of the unevenness and inequity of energy consumption, or the crucial role domestic consumption of coal played in the establishment of the fossil economy in the US. Writing on the latter topic, Christopher F. Jones observes: “Homes constituted the first large

market for anthracite coal. Even though fossil fuels are often associated with industrial consumers in the popular imagination, residential markets have played pioneering roles in driving energy transitions” (61). Such narrowness, however, tends to undermine or overshadow the kinds of bigger picture thinking (and action) necessary to instigate energy transition, ultimately individualizing what is a much larger, systemic problem we face—an energy impasse. Remembering to turn lights off after you’ve exited a room will not dismantle the hegemony of the fossil economy. Elizabeth Shove and Gordon Walker explore this relationship between individual energy consumption and the larger system of the fossil economy. In “What is Energy For? Social Practice and Energy Demand,” Shove and Walker problematize how future energy demands are overwhelmingly framed in terms of present demands on an increasing scale by insisting on a social view of energy as such. By arguing for a social understanding of energy, they show that energy policies are not “neutral,” and that the current configurations for the distribution of energy are unequal. Following Shove and Walker, when we ask “Energy... for what?” we hope not only to address individual energy consumption habits, but also to make visible the ways in which energy shapes culture and society, and vice versa. Such visibility is integral to framing energy transition in terms not just of technical solutions but of social ones as well.

While the lack of scholarship on the relationship between energy transition and social media is clear, looking at the social media activity of corporations, groups, and organizations whose interests lie in either inhibiting or propelling energy transition establishes the space from which to speculate what dynamics are at work regarding social media and energy transition in Canada. Whether inhibiting or propelling energy transition, these efforts embody what Manuel Castells has termed “narrowcasting” (Castells 323). Narrowcasting, according to Castells, involves “creating web sites, setting up channels on YouTube, establishing pages on social networking sites, and using mobile phones to send SMSs” and is a preferred communication method employed by environmental groups (323). As a social media communication strategy, narrowcasting is deployed by those seeking to inhibit energy transition or propel it, which makes their efforts structurally indistinguishable. Indeed, the differences reside largely in content and in conceptual understandings of economy, energy, environment, society, and so on. When surveying the range of efforts on either side of the issue, what becomes immediately clear in surveying these efforts is that, for the most part, those that support the fossil economy *avoid* discussions of the imminent energy transition in social media with a few notable exceptions, while environmentalist and many First Nations groups who oppose or problematize the fossil economy and support transition quite actively comment on it, directly incorporating it into their platforms for broader social and environment justice. At the core of these divergent views on energy transition are categorically opposed understandings of energy itself, with the former settling on a techno-scientific, narrowly economic view and the latter a more social and cultural one.

b.1 *Inhibiting Transition*

Although it may not be entirely fair to assert that industry is *de facto* inhibiting energy transition via social media, the claim holds some legitimacy. A majority of industry social media efforts considered in this study promote fossil fuel infrastructural developments such as pipelines, and energy transition is rarely, if at all, commented on. Some of the larger corporations, such as Beyond Petroleum (BP) or ExxonMobil, do comment on it and promote the ways in which they

are dealing with climate change and investing in renewable energy. Dominic Emery and David Eyton distil BP's approach to energy transition in the bullet points of a 2015 presentation:

We believe that action on climate is needed
 Access to affordable and secure energy is fundamental to human prosperity
 There are multiple actors and actions
 All fossil fuels are not equal
 There is a variety of resource holders and users
 BP will continue to play its part, as described today. (n.p.)

The presentation concludes by gesturing towards the possibilities of technology—BP's commitment to a "Long-term technology view" (n.p.)—as well as advocating for a more general transition. Broaching the topics of climate change and energy transition is admirable, but when paired with the more general lack of commentary on energy transition from other energy companies operating in Canada, BP's argument for the maintenance of the fossil fuel economy (albeit one fuelled exclusively by oil) signifies a troubling oversight of the necessity of transition beyond *all* fossil fuels, despite the belief that "All fossil fuels are not equal."

Shell echoes BP in its treatment of energy transition. In a 2015 speech entitled "Accelerating the Energy Transition with Innovation," Royal Dutch Shell's Projects & Technology Director, Harry Brekelmans, explains how technological innovation will provide the solutions for reconciling the rift between growth and environmental degradation, citing such promising technological advances as Carbon Capture Storage (CCS). "Innovation holds the key to solving this conundrum," he suggests. "It enables us to balance environmental impact on the one hand with availability and affordability on the other" (n.p.). The faith in technological solutions to overcome our collective reliance on fossil fuels, and thereby climate crisis more generally, categorically undermines the seemingly rote acknowledgement from companies like BP or Royal Dutch Shell that energy is indeed social. While Enbridge's "Life Takes Energy" advertising campaign might seem to be one that accurately names the degree to which our lives depend on fossil fuels, it does so only to make us complicit in the contemporary energy system: we need energy for everything, and so we need companies like Enbridge, too.

The social media presence of a number of companies in Canada is inconsistent in terms of upkeep and activity, although many are using services such as Twitter, Facebook, and YouTube in coordinated efforts to promote their companies and the oil sands more generally. BP (21.4k Twitter followers; 205,479 Facebook likes), Enbridge (12.5k Twitter followers; 7,551 Facebook likes), ExxonMobil (172k Twitter followers), Imperial Oil (11.3k Twitter followers), Suncor Energy (24.1k Twitter followers; 19,944 Facebook likes), Syncrude (11.5k Twitter followers; 586 Facebook likes), and Royal Dutch Shell (34k Twitter followers; 5,736,223 Facebook likes) are notably very active. Enbridge in particular stands out due to its emphasis on relatively high production YouTube videos. Its three channels—Enbridge Media, Enbridge Gas, and Enbridge Pipelines—promote Enbridge in general, as well as specific infrastructural developments like the proposed Northern Gateway Pipeline. Indeed, Enbridge's catch-all YouTube page, Enbridge Media, contains a number of advertisements, short films, and interviews that emphasize the social, ecological, and economic soundness of Enbridge's practices. These social media promotional efforts, as varied as they are in terms of activity and content, suggest that social media is viewed in part as a significant venue from which to circulate discourses that frame fossil fuels as the only viable energy source of the present.

The most sustained attempts to explicitly inhibit energy transition through social media, however, are from allegedly grassroots organizations that use social media to promote Canada's oil industry and its developments, especially pipelines. The aim of these organizations seems relatively clear: to use social media to circulate *counter-counter-discourses* regarding oil sands developments like pipelines, and to ultimately garner public participation in that circulation. By invoking the notion of counter-counter-discourses we hope to underscore the ways in which these efforts aim to destabilize or disrupt what can be viewed as the counter-discourses of petroculture, discourses circulated by many Indigenous groups and environmental groups through social media channels and others, such as the "Hold the Wall Campaign" or Idle No More. In blog posts, groups like Ethical Oil decry the supposedly uneven debate surrounding the oil sands in Canada, claiming that oppositional voices are privileged in mainstream media. British Columbia for Prosperity echoes the sentiments of Ethical Oil when describing their aims: "Environmental concerns are perpetually top of mind among British Columbians. There are *many organizations who oppose all development and their voices have largely dominated the conversation*. We seek to bring balance to the discussion rather than perpetuate further divisions" (emphasis added, n.p.). Yet there is no denying that the dominant patterns of behaviour in modernity fundamentally rely on the consumption of fossil fuels. In other words, the claim that anti-fossil fuel, anti-oil sands discourses are privileged in mainstream media simply does not hold up when we consider the hegemony of petroculture. The counter-counter-discourses from groups like Ethical Oil reconfirm (and reproduce) these systems while attempting to refigure, supposedly from the "bottom-up," Canadian oil as a socio-economically, socio-ecologically *positive* force, making it more palatable to a public concerned about the current climate crisis.

Even some environmentally-oriented groups actively seek to delay transition and maintain the fossil economy through social media and other traditional media venues, namely the organization Canadians for Clean Prosperity (CCP). CCP is a group closely aligned in structure to the ones mentioned above, but with a focus on green technologies and free market mechanisms. In its own words, the organization "seeks to build enduring political support for market-based policies that generate growth while conserving our environment" (n.p.). Their market-based focus is what stands out here and puts them in opposition to the types of groups promoting and propelling energy transition discussed below. If we understand energy to be fundamentally social and cultural, as those of us working in the energy humanities do, then such market-based attempts to propel transition are misplaced at best and futile at worst. A February 2016 *Maclean's* article entitled "Build pipelines or curb emissions? Canada can do both," written by the Executive Director of CCP, Mark Cameron, shows as much. In it, Cameron contends that the free market impulses of the CCP project can maintain fossil fuels as a dominant energy source now and in the future. "With a strong regulatory process that takes upstream emissions impacts into account, and a commitment to carbon pricing that ensures that Canada is properly pricing externalities due to its emissions," he writes, "there is no reason why new pipelines to carry Canadian oil to global markets shouldn't be part of Canada's energy future" (n.p.). Cameron's position is revealing; it hinges entirely upon the very market mechanisms that produced the impasse we currently face. A new pricing mechanism that takes into account externalities such as pollution will not address the urgent need to instigate energy transition.

The efforts from both industry and groups such as Ethical Oil, those that generally *inhibit* transition, aim to maintain the fossil economy and the petroculture by imbuing Canadian oil with socio-ecologically positive characteristics. Indeed, these groups seem to mimic strategies of grassroots groups that oppose the oil sands and the fossil economy—thus the designation of

counter-counter-discourse. Several key terms of inhibiting or delaying transition emerge here: innovation, progress, and prosperity. Such terms underscore the ways in which those who seek to delay transition conceptualize energy as innately techno-scientific. Indeed, what these efforts ultimately signal is a *strategic* misreading or misunderstanding of what energy is for and what it does on a socio-cultural level. They are strategic efforts because such a misunderstanding of energy allows for the maintenance and perpetuation of fossil fuel dependence, despite the alarmingly destructive, unsustainable tendencies of such dependence and the urgency of transitioning beyond it.

b.2 *Propelling Transition*

Groups and organizations attempting to propel energy transition through social media by campaigning against oil sands operations and developments (by, for example, advocating for strategies such as divestment) are largely part of a broader movement in Canada that recognizes the interrelation between struggles for social and environmental justice and struggles against the hegemony of the fossil economy. This understanding of transition, and of energy more broadly, is at odds with the vision of transition offered by BP, Ethical Oil, or CCP. While those who inhibit transition emphasize technical solutions to the energy impasse with discourses of innovation, progress, and prosperity, groups who seek to propel transition through social media by calling for the dismantling of the fossil economy emphasize energy's sociality.

Social media campaigns spearheaded by these groups are active, generally have sustained campaigns with many followers, and, perhaps most importantly, often address energy transition directly. From their respective vantage points on the relationship between energy, environment, and society, the David Suzuki Foundation (141,000 Twitter followers; 410,523 Facebook likes), Greenpeace Canada (36,500 Twitter followers; 164,506 Facebook likes), Idle No More (32.1k Twitter followers; 137,928 Facebook likes), the Pembina Institute (17.1k Twitter followers; 4,857 Facebook likes), Sierra Club Canada (12.5k followers; 6,034 Facebook likes), and This Changes Everything (11.8k Twitter followers) all use social media to circulate discourses underscoring the urgency of energy transition. Popular hashtags on Twitter, such as #Shellno, indicate a broader public engagement with questions of energy transition and impasse, but it is worth briefly examining these more concentrated efforts due in large part to their direct objectives. Producing blog posts, YouTube videos, tweets, and so on, these groups and movements directly and substantially discuss energy transition as a crucial aspect of their respective aims. What stands out in these discourses is, as mentioned above, a conceptualization of energy and energy transition not in terms of innovation or technology but in relation to the social, however broadly conceived. Technology certainly plays a part in these formulations of a desirable energy transition, especially in terms of the development of renewable energies, but they take social and environmental justice as a starting point from which to imagine and demand a just energy transition.

The clearest, most representative attempt in recent history to leverage social media for the purpose of propelling energy transition in Canada is the *Leap Manifesto*, a call to arms penned “at a two-day meeting in Toronto attended by representatives from Canada’s Indigenous rights, social and food justice, environmental, faith-based and labour movements” (n.p.). Emphasizing the need to address the interrelated problems of our reliance on fossil fuels, our contribution to climate change, and the “deepening poverty and inequality” of vulnerable populations like First Nations, the manifesto points to the disjuncture between the purported values of Canada and its extractivist reality. “These facts are all the more jarring because they depart so dramatically from

our stated values: respect for Indigenous rights, internationalism, human rights, diversity, and environmental stewardship” (n.p.). To address the inequalities perpetuated by the partnership between the fossil economy and the Canadian government, the *Leap Manifesto* calls upon the latter to divest, while underscoring the intersectional issues at the core of Canadian extractivism. Moreover, it emphasizes the ways in which renewable energy is only one minor aspect of energy transition. In doing so, the manifesto acknowledges the fundamental *sociality* of energy, and the socio-ecologically, socio-culturally destructive tendencies of the fossil economy, while refusing to subscribe to the types of narrow views of energy that maintain and perpetuate inequality. There is no longer any excuse or rationale, the manifesto argues, for building new infrastructure projects that lock us into increased extraction decades into the future.

The structure or form of the social media campaign for the *Leap Manifesto* doesn’t differ entirely from the kinds of campaigns such as “Energy Citizens” from the Canadian Association of Petroleum Producers (CAPP) or the pledges to (for example) support Enbridge’s Northern Gateway pipeline from Canada Action. Castells’ labelling of this type of social media work as “narrowcasting” proves to be an important framework from which to approach the role of social media in energy transition. The model is instructive because it allows us to see an emerging structure of social media discourse that is leveraged by the companies and groups discussed in this report, regardless of their specific, respective aims in regards to transition and impasse. However, unlike the *Leap Manifesto*, CAPP and Canada Action pledges do not contain any demands—they merely ask signatories to perpetuate the already existing, already dominant energy regime. This is a crucial fact and provides an entry point from which to speculate on the role—or *potential* role—social media plays—or *could* play—in energy transition. Efforts to promote Canadian oil, to ultimately inhibit energy transition, reveal that social media may play a role in maintaining already existing energy relations encapsulated in the notion of petroculture; this notion, however, is troubled by such campaigns as the *Leap Manifesto*, which suggest that social media is a space of contention and that, perhaps, it is a venue well suited for disrupting conventional, techno-scientific understandings of energy and transition.

Does—indeed *can*—social media propel or inhibit energy transition? Although such a question is tied to larger questions regarding the ways in which media inform behaviour and imaginaries, social media’s role in energy transition remains complex and, perhaps most importantly, under-researched. The two opposing uses of social media with regard to energy transition—attempts to inhibit transition or propel it—suggest that whether or not the circulation of discourses supporting or inhibiting transition directly translate to any shift in the broader public’s behaviour or understanding of energy, significant effort is being expended on this circulation and is in turn worthy of closer study. Whereas the companies, groups, and organizations that have vested interests in delaying transition frame energy, impasse, and transition in terms of technological innovation, those that seek to propel transition deploy a more nuanced, socio-ecological perspective on energy and energy transition. The position taken by those who use social media to advocate energy transition mirrors that of the energy humanities—energy is at once social, economic, and ecological, and *must* be understood as such. Indeed, the narrowly techno-scientific and economic view of energy offered in corporate discourse does not illustrate the complex role of energy in broader society; instead, it opts to isolate the role of energy in ways that maintain the current hegemonic energy regime. If, as the *Leap Manifesto* suggests, a more equitable future depends on the democratization of energy (its production, distribution, and consumption), then such a future also relies on reconfiguring the Canadian energy imaginary from a techno-scientific one to a social one. Such a project embodies what

Christopher Jones calls the development of “just energy infrastructures”: “systems that can provide access to a wide range of users, not simply the largest markets” (160). Seen in this light, perhaps social media’s inherent sociality lends itself to destabilizing the very discourses that maintain energy, and energy transition, as technological or economic, advocating instead for a social view of energy and transition—a crucial epistemological reconfiguration that precedes the types of energy transition that will result in a more democratic energy regime.

(c) Research-Creation

c.1 *Methodology as Finding*

While research-creation as a knowledge creation and dissemination strategy is both generative and productive, energy transition and energy impasse represent challenges to its practices. As a methodology it presents artist/scholar researchers with opportunities to transcend disciplinary boundaries in a way that is truly reflective of the pedagogical turn within artistic practices and the potentials available through integration with social sciences and humanities disciplines (Podesva). The resulting form is a hybrid, socially engaged, intellectual and artistic practice wherein knowledge production does not necessarily privilege text. Because research-creation is a relatively new formulation, retroactively circumscribing the category requires qualifying boundaries that are not necessarily self-evident, especially when looking for research-creation examples that differ from artistic practice in general; not all creation is research-creation. Whenever possible, and recognizing the spectrum of research-creation methodological approaches, we have opted for a fairly stringent use of “research-creation” so as to develop categories with meaningful distinctions: works that have embedded, artistic research or practice-based research methodological assumptions that actively and critically acknowledge fossil fuel culture in the concept, production and dissemination of the creative work. Below we cite two research-creation definitions—one from the artist Graeme Sullivan, the other from SSHRC—that together reflect the approach of this search:

[T]o appreciate how arts contributes to human understanding, there is a need to locate artistic research within the theories and practices that surround art making. It is from this central site of creative practice that other forms of inquiry emerge, such as critical and philosophical analysis, historical and cultural commentary, and educational experience ... it affirms that artistic thinking and making are cognitive processes ... Furthermore, this asserts that the visual artist is not only adept at expression and communication but also plays a crucial role in cultural critique, historical inquiry, and educational development. (Sullivan 97)

Research-creation is an approach to research that combines creative and academic research practices, and supports the development of knowledge and innovation through artistic expression, scholarly investigation, and experimentation. The creation process is situated within the research activity and produces critically informed work in a variety of media (art forms). Research-creation cannot be limited to the interpretation or analysis of a creator’s work, conventional works of technological development, or work that focuses on the creation of curricula. The research-creation process and the resulting artistic work are judged according to SSHRC’s established merit review criteria. (SSHRC)

We used the search terms “art and energy,” “art and oil,” “art and petroleum,” “energy and research-creation,” “oil and research-creation,” and “petroleum and research-creation” through the databases Artstor, Art + Humanities Citation Index, and Communication & Mass Media Complete. In addition, we did more generic Google searches utilizing the same terms as well as search queries through major Canadian art galleries and museums. The established databases yielded few results, with the exception of works by Buckminster Fuller (Dymaxiom House, 1929) and the Shanghai EXPO (Oil Pavilion, 2010) in relation to energy and design, alongside a myriad of associated works. Major Canadian galleries revealed a similar pattern. It is only

through Google searches and existing familiarity with the limited field that a small number of meaningful examples were found.

One of the challenges of the category is: how to untangle energy and research-creation from other artistic discourses and subjects of artistic practice, namely environmentalism, climate change, climate mitigation, nature, aesthetics, antiquity studies, art history, art sponsorship, realism, critical media and advertising studies, and sustainability, to name a few? The likely result of the constellation of more-dominant associations is that research-creation is subsumed, made invisible, by larger, more established categories, practices, and artistic discourses. There is a strong possibility that the material we are seeking is to be found outside of the normal categories that define research creation. This constitutes a significant gap in relation to energy and research-creation and points to the need to bring greater awareness and critical reflection to the specificity of the relationship of cultural production and energy.

c.2 Representing Petromodernity

There is an aesthetic and narrative struggle over the “who” and “how” of the ways in which petromodernity is represented. Fossil fuel corporations, energy adverts, as well as government leaders, departments, and programs wholly acknowledge a specific formulation of petroculture and they tend to present an aesthetic of energy based upon immateriality, abstraction, innovation, economy, stewardship and consumption. Research-creation tends to reflect an oppositional aesthetic, one that is alienating, industrial, harmful, septic, excessive and tactile. Out of these competing representations or significations we can identify some common tropes and forms while establishing an overall claim that representation is as much a site of contest as are the actual physical spaces of energy use, transportation and production. Of these tropes, the most dominant and recurring is a clean/dirty aesthetic binary—where the promotion of consumption and growth is opposed by ecological thrift and moderation—measured through the overarching and contested category of “balance.”

The majority of research-creation is critical of energy infrastructure expansion. With such critique, most works of research-creation problematize the materiality, the use, and the impact of petroleum on the environment, economy, communities, and Canadian national identity. That said, given the broad social, economic and cultural implications of energy within Canadian society, we expected to find more research-creation works within the arts. Documentary film is the most represented form, with other forms not as readily identifiable in our search. Outside of film, there are less than 100 individual, curatorial, and collective works identified in this survey. This is a potentially significant knowledge gap. Additionally, according to the SSHRC database, there have been less than a dozen SSHRC-funded research-creation projects that deal with energy, primarily in relation to water, over the past fifteen years. Within this context of absence, non-commercial institutions play an important role in research-creation and dissemination with respect to projects on petroleum and energy; they are crucial because other social actors and commercial interests have shaped exhibits in most other cultural spaces.

Artistic curation and thematic artistic residencies are emerging forms of research-creation. Because of the diffuse and dispersed nature of energy flows, it seems appropriate that curation is a site for generating intellectual, practical, and conceptual frameworks, ones that establish links between seemingly disparate artistic practices under the rubric of energy. Moreover, there is an urban/rural divide within research-creation, as well as distinctions between those cultural producers who use diverse heritage forms of expression and those using

contemporary practices and representations of contested aesthetic themes, future imaginaries, and diverse material, social and cultural interests.

An example of the way that curation transforms isolated works into a tapestry of petro-reflection can be seen in the shifts in the meaning of Canadian Indigenous artist Brian Jungen's *Jerry Can* (2008), a carved gallon gasoline jug. In its original context *Jerry Can* represents the contradictions of consumer culture and the Indigenous experience through its use of an everyday, often readily disposed product, which is recast by Jungen into an object of beauty, with First Nations patterns and other designs based on natural forms carved into the surface of this quotidian object. In 2012, *Jerry Can* was included in *Beneath a Petroliferous Moon*, a show at the Mendel Gallery in Saskatoon curated by Jen Budney. She writes:

Petroleum, in its extraction, distribution, utility, economics, and social, political, and environmental impacts, defines our contemporary world. Yet, in the developed countries that consume it most, it remains a strangely invisible substance, evident primarily at the clean and bright gas stations dotting our city streets and highways. (Budney)

In the context of *Beneath a Petroliferous Moon*, *Jerry Can* takes on a new meaning. In addition to being a reflection upon the intersection of the everyday and the Indigenous, it also cultivates the irony of the aesthetically beautiful embellishment of an object of extraction, toxicity, and industrial expansion, demanding a petrol-reckoning from the viewer.

Another example of curation as research-creation in relation to energy transition is the exhibition *Energy* (2015) at the Foreman Gallery at Bishops University in Quebec, a show that curators, Vicky Chainey Gagnon, Genevieve Chevalier, and Gentiane Belanger describe as exploring "the theme of 'energy,' while reflecting on its socio-political and philosophical implications, as well as its uses and abuses." Additionally, *Synthetic Seasons*, an exhibition of the work of Mia Feuer curated by Naomi Potter, highlights how an artist and curator can work together to engage in research-creation in relation to energy. Through a series of installations, sculptures, and material investigations, the exhibition problematizes and situates the energy desires and contradictions at the core of contemporary industrial living. As Potter observes of Feuer: "She is a woman thinking about the landscape, not in a female romantic way, but in a powerful feminist way, which I think is an interesting shift in terms of a post-natural landscape" (Potter).

There are some evolving questions about traditional art practices versus postmodern interdisciplinary practices within the expanded field of art, questions that bear on approaches such as social practice, which merges aesthetics with social sciences and humanities. In 2014 the Kitimat Museum featured the exhibition *Kitimat Questions: Energy* (2014). In curating the event, the museum attempted to engage with the impending pipeline development. To the curators' surprise, however, few artists reflected their political views through their artistic practices or through the lens of petrol *as* culture (Beer). Whether this response is unique to the Kitimat experience or scalable to other localized and isolated communities requires further investigation. Likewise, there is evidence that regional identities and distinct relations of consumption and extraction shape articulations of resistance and creation-based responses to fossil fuel infrastructure expansion.

For example, Kristopher Karklin's artwork focuses on the social relations that surround extraction in Northern Alberta (Collison). Absent in his work are refineries, pipelines, gargantuan trucks, apocalyptic landscapes, overburden, etc. Instead, what we see in his photographic dioramas are representations of the alienating architecture that subject-bodies working in the oil sands inhabit. Such rationalized built space leaves workers isolated and naked:

a direct contrast to the promises of oil riches, self-actualization, and financial freedom supposedly available through extraction employment. Another Alberta artist, Peter von Tiesenhausen, has addressed oil in a unique way by using the legal and copyright possibilities of land to challenge the combined expansionist visions of petroleum companies and the federal state. In his most significant work, *White-picket Fence* (von Tiesenhausen, 2014), von Tiesenhausen created several artworks on his vast acreage and then applied for his land to be officially trademarked as a work of art so as to make expropriation of his land by the state to make way for pipelines more difficult (Keefe).

c.3 *Specific Forms*

- Photography offers diverse forms of interpretation and consumption of oil sands imagery. A strategy of aestheticized realism is common within photography, creating ambiguous knowledges, readings and understandings of both impasse and transition. God's eye view photographs are prominent, and avidly collected. A deep ambivalence, however, attends the consumption of work by artists such as Edward Burtynsky (Burtynsky). Burtynsky's photography is often appreciated for the aesthetic beauty of its depiction of oil culture, yet its god's eye stance and abstracted relationship to the viewer tend to be understood uncritically. It can also be employed to compare the Athabasca oil sands to "Mordor" (Arrowsmith), which, depending on the inflection, can be a signifier of impasse, transition, or both.
- A well-established body of work in film assesses and categorizes the varied themes, tropes and ethics of research-creation. With respect to energy and film, we can say that, in a broad sense, documentary is the dominant mode, and that the preponderance of such work is highly critical of the fossil fuel industry. These films are funded privately, publicly and also through crowd-sourcing campaigns.
- Literature is an emerging category, and as such entails limits and possible silences within the search terms themselves. Again, there is a well-established body of critical literature as well as novels and fiction that deals with energy humanities, the fossil fuel industry, and petromodernity more broadly. Within the frame of this search, we discovered additional literary instances, primarily within the British Columbian and Albertan context, that deal with political resistance to energy infrastructure expansion and alternative post fossil-fuel imaginaries (Collis; The Enpipe Contributors; Kroll *Swallow*; Kroll *Wellspring*; Leclerc; Wilson, "Petro-Mama").
- Sound is not widely reflected in this sample, notwithstanding soundscape installations by MacDonald (2012) and Smallwood (2012); a more intensive search would likely yield more examples.
- Collective art/activist platforms with a research-creation orientation are more prevalent in the USA/Europe/UK. These collectives, such as The Natural History Museum, Platform, Liberate Tate, and Otolith Group, are predominantly situated within the art world and advance critiques of the institutionalization of petrol culture and petrol dollars specifically, and of growth capitalism premised upon the extraction of cheap and free-flowing energy more generally.

c.4 *Energy Research-Creation*

Mapping research-creation and energy as a field will require more extensive and sustained investigation of existing and emerging practices and tendencies. One preliminary approach will begin with the premise that artistic practice and environmental activism (as a precursor to

cultural discussions of energy, sustainability, and civilization) reflect ongoing cultural critiques of industrial capitalist economy. While research-creation itself is a newly emerging category and energy research-creation is in its nascent stages, such practices find historical anticipation in the methods of creators such as Buckminster Fuller, whose design and artistic works manifested powerful critiques of petro modernity. Similarly, we can look to the urban detritus works of Mierle Ukeles Leiderman (Danchev) or the land art of Robert Smithson (Holt) in order to detect a methodology that engages with fossil fuels' unique cultures. The intellectual writing of E.F. Schumacher, Rachel Carson, Nicholas Georgescu-Roegen, Howard and Elisabeth Odum and the Limits to Growth authors of the 1970s, to name a few, reflected a creative research process through a petroculture lens. We can also think of the Futurist movement in the arts, though celebratory not critical of industry and energy, as a type of research-creation methodology, one that pre-dates the contemporary definition and categorization. The recognition of this lineage within the field of artistic practice would create a strong synergy with energy humanities, and transdisciplinarity opportunities for collaboration, knowledge production, knowledge sharing and dissemination. While policy offers one way to create change, research-creation provides another powerful tool for shifting social attitudes. Research-creation has a vital role to play in communicating alternative energy futures, precisely in order to inspire a move beyond energy impasse and into energy transition.

In light of the gaps in knowledge outlined above, we see the need for a distinct field in which knowledge creation about energy impasse and transition can be constructed, articulated, formed, indexed, and located. Establishing "energy research-creation" as a unique category would enhance the visibility of these issues and approaches much as "energy humanities" has drawn out the energy question—from a context that includes ecology, environment, economy, activism, sustainability, and other cultural categories—so as to insist that energy is not merely an input but the force that undergirds all of our social, human, and inter-species relations, and that has shaped all our institutions, beliefs, desires, and expectations. With the increasing visibility of energy and its social implications, the dissemination possibilities for "energy research-creation" as a specific approach are exponential, providing an intellectually and culturally rich means of engaging with diverse publics to build and disseminate knowledge.

D. KNOWLEDGE MOBILIZATION

We will mobilize the knowledge synthesized in our project by way of a variety of mechanisms, including: dissemination via academic publications, web information, symposia and conferences, and the public circulation of this report on the project's findings. We have already embarked on initial knowledge mobilization of results issuing from our research at two events in the last three months:

- “After Paris 2015” Symposium held at the Art Gallery of Alberta on 28 January 2016, at which PI Szeman joined an interdisciplinary panel of experts to discuss the significance of COP 21 for energy transition, especially in Alberta and Canada in the immediate future;
- “What’s Fueling Our Future?,” a panel discussion co-hosted on 18 April 2016 by Universities Canada and the U of A at which PI Szeman offered perspectives from the Energy Humanities on the event’s titular question.

Additional plans for knowledge mobilization include:

1. Web dissemination: *Petrocultures* and *After Oil*

The existing *Petrocultures* (petrocultures.com) and the *After Oil* (afteroil.ca) websites already attract significant online traffic from around the world. We are also in the process of creating a French-language version of the primary elements of each website, which will further expand the international community of users with access to our research. This final project report and the bibliographic resources generated in conjunction with our knowledge synthesis will be posted at both sites and made freely available to end-users.

2. Academia.edu:

Increasingly, academic papers are circulating on sites such as AcademiaEdu. All project members who maintain an Academia.edu profile will circulate the document, thereby connecting with a wide national and international network of scholars working on energy humanities topics. Past experience has shown that this method of circulation can result in significant downloads, with numbers much higher than those possible even for bestselling academic publications.

3. ERA: Institutional Repository

We will also archive this report using the University of Alberta’s ERA project, an institutional repository searchable through the NEOS network of libraries in Alberta.

4. Conference Dissemination

The output of this knowledge synthesis will be disseminated at three conferences in 2016. Each of these conferences will speak to a range of disciplinary communities, including important groups of scholars working on issues directly related to the questions concerning energy and natural resources identified in SSHRC’s “Imagining Canada’s Future” initiative. These conferences are:

a. Cultures of Energy—Rice University (April 2016)

This annual event, held in April this year, has become an important site for the circulation of research on values, cultures, and communities in relation to energy and the environment. Participation by PI Szeman has provided us with an excellent opportunity to circulate early research results to an international group of academics and policymakers. The networks of users we reached through this conference at Rice are distinct from those with whom we will share our research at Congress.

b. Congress 2016 (May 2016)

All members of our team will attend Congress to share the results of our research with the Canadian academic community, both at the event hosted by SSHRC on June 1 and in specific organizations that cross humanities disciplines: ACCUTE, ILSA, and Society for Socialist Studies.

c. Petrocultures 2016 (August 2016)

The third iteration of Petrocultures is a four-day conference (August 31-September 3, 2016) that will bring together scholars, policy-makers, industry employees, artists, and public advocacy groups from across North America and beyond. Confirmed Keynote Speakers include: Barbara Neis (Memorial University); Helge Ryggvik (University of Oslo); Graeme MacDonald (University of Warwick); and Elizabeth Nyman (University of Louisiana at Lafayette). We plan to disseminate our research results via a special panel that will involve the PI and co-applicants.

5. Appendix to *Energy Humanities: A Reader* (under contract with Johns Hopkins University Press)

Energy Humanities: A Reader offers a carefully curated selection of the best and most influential work in energy humanities that has appeared over the past decade. To stay true to the diverse work that makes up this emergent, interdisciplinary field, selections range from anthropology and geography to philosophy, history and cultural studies, to recent energy-focused interventions in art and literature. We intend to include a version of this final report as an appendix to this volume, which will ensure that it will be accessed by a range of users for years to come.

6. Academic, Professional and Policy Networks

Through their previous and on-going work, the researchers involved in this project have access to a range of academic, professional and policy networks. These networks will be notified about our research results and informed about where they can access our final results. These include:

a. Petrocultures listserv. The existing listserv is made up of over 250 experts in the field, each connected to their own research networks.

b. Energy Futures Lab. PI Szeman has become a member of this ‘think tank’ (energyfutures.com) that will include members of industry, government and NGOs. This Lab began in November 2015; Szeman has kept and will continue to keep members of the Lab informed about developments and results concerning our knowledge synthesis in OEH.

c. *Banff Research in Culture (BRiC): On Energy*. Several members of the “On the Energy Humanities” team will be spending one month with Keller Easterling, Matther Huber and other Energy Humanities scholars and artists at the Banff Centre for the month of June, working on traditional academic projects as well as research-creation projects, as part of a research residency program called “On Energy.” Members of the team will have a range of opportunities to share the research from this KSG report with colleagues. In particular, PI Imre Szeman’s keynote speech on June 2, 2016 will allow him to draw attention to the reports key findings, and to point audience members to the full report archived online.

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IV. Energy and Research-Creation

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a) Oil & Gas

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- Being Caribou*. Dir. Leanne Allison and Diana Wilson. June 2005.
- At Sea*. Dir. Peter Hutton. 2007.
- Blood and Oil*. Dir. Jeremy Earp. 2008.
- The Big Fix*. Dir. Josh Tickell & Rebecca Harrell Tickell. June 2012.
- A Crude Awakening*. Dir. Basil Gelpke, Raymond McCormack a& Reto Caduff. May 2006.
- Crude: The Incredible Journey of Oil*. Dir. Richard Smith. ABC Science. May 2007.
- Crude: The Real Price of Oil*. Dir. Joe Berlinger. Jan. 2009.
- Elemental*. Dir. Emmanuel Vaughan-Lee and Gayatri Roshan. Oct. 2012.

Fuel. Dir. Josh Tickell. Jan. 2008.

Gas Hole. Dir. Scott Roberts & Jeremy Wagener. April 2008.

GasLand. Dir. Josh Fox. Jan. 2010.

Gulf. Dir. Meredith Danluck. TOXIC. VICE TV. June 2010.

Haynesville: A Nation's Hunt for an Energy Future. Dir. Gregory Kallenberg. Nov. 2009.

In the Kingdom of Oil and Millions. [Neft va milyonlar saltanatinda]. Dir. Boris Svetlov. May 1916.

A Journal of Crude Oil. [Caiyou riji]. Dir. Wang Bing. Jan. 2008.

The Killing Ground. Dir. Steve Singer. 1979.

Land of Oil and Water. Dir. Warren Cariou and Neil McArthur. May 2009.

Lenz, Garth. "The True Cost of Oil." TEDX TALK. TEDxVictoria. Nov. 2011.

Lessons of Darkness. Dir. Werner Herzog. 1992.

Manufactured Landscapes. Dir. Jennifer Baichwal. Sept. 2006.

The Oil Factor. Dir. Gerard Ungerman and Audrey Brohy. July 2005.

Oil on Ice. Dir. Bo Boudart and Dale Djerassi. May 2004.

Oil: Smoke and Mirrors. Dir. Ronan Boyle. Jan. 2007.

Petro-Mama: Mothering in a Crude World. Dir. Sheena Wilson. 2016.

Petropolis. Dir. Petter Mettler. 2009.

The Pipedreams Project. Dir. Faroe Des Roches and Ryan Vandecasteyen. 2011.

Split Estate. Dir. Debra Anderson. Aug. 2009.

SpOil. Dir. Trip Jennings. 2010.

Sweet Crude. Dir. Sandy Cioffi. June 2009.

Tipping Point: Age of the Oil Sands. Dir. Tom Radford and Niobe Thompson. *The Nature of Things*. CBC. January 2011.

Total Denial. Dir. Milena Kaneva. March 2006.

United Nations University. *Oil Series*. 2010.

White Water, Black Gold. Dir. David Lavallee. 2011.

Wiebo's War. Dir. David York. Oct. 2011.

b) Electric

Power Trip. Dir. Paul Devlin. Feb. 2003.

c) Coal

Before the Mountain Was Moved. Dir. Robert K. Sharpe. March 1970.

Broken Rainbow. Dir. Mario Florio and Victoria Mudd. 1985.

Burning the Future: Coal in America. Dir. David Novack. April 2008.

Harlan County, USA. Dir. Barbara Kopple. Oct. 1976.

The Hole Story. [Trou Story]. Dir. Richard Desjardins and Robert Monderie. Nov. 2011.

Journey to the End of Coal. Dir. Samuel Bollendorff and Abel Ségretin. 2008. Interactive web documentary.

The Last Mountain. Dir. Bill Haney. Jan. 2011.

Mountaintop Removal. Dir. Michael Cusack O'Connell. Sept. 2007.

Sludge. Dir. Robert Salyer. 2005.

Westray. Dir. Paul Cowan. Sept. 2001.

West Virginia. Dir. Meredith Danluck. TOXIC. VICE TV. Aug. 2009.

d) Nuclear

Buried in Earthskin. Dir. Helena Kingwill. 2009.

Into Eternity. Dir. Michael Madsen. Jan. 2010.

Uranium: Is It a Country? Dir. Kirsten Schnatz. Nov. 2008.

White Horse. Dir Maryann DeLeo and Christophe Bisson. 2008.

e) Water & Hydroelectric

America's Water Crisis. Dir. Meredith Danluck. TOXIC. VICE TV. Nov. 2012.

Blue Gold: World Water Wars. Dir. Sam Bozzo. Oct. 2008.

Cadillac Desert. Dir. Jon Else and Linda Harrar. June 1997.

Chasing Water. Dir. Peter McBride. Sept. 2011. Yale Environment 360.

Dreamland. Dir. Þorfinnur Guðnason and Andri Snær Magnason. April 2009.

Drowned Out. Dir. Franny Armstrong. Aug. 2002.

Elemental. Dir. Emmanuel Vaughan-Lee and Gayatri Roshan. Oct. 2012.

Flow: For Love of Water. Dir. Irena Salina. Dec. 2011.

Hindsight and Foresight. Terra #534. Dir. Gary Shigenaka.

Last Call at the Oasis. Dir Jessica Yu. May 2012.

Liquid Assets: The Big Business of Water. CNBC Originals. Sep. 2010.

One Water. Dir. Sanjeev Chatterjee and Ali Habashi. Feb. 2008.

Poisoned Waters. Dir. Rick Young. PBS Frontline.

Running Dry. Dir. Jim Thebaut. 2005.

Sam. Dir. Aaron D. Weisblatt. 1986.

Semper Fi: Always Faithful. Dir. Tony Hardmon and Rachel Libert. April 2011.

Tapped. Dir. Stephanie Soechtig & Jason Lindsey. July 2009.

Thirst. Dir. Alan Snitow. June 2004.

Waterlife. Dir. Kevin McMahon. May 2009.

The Water Front. Dir. Liz Miller. Nov. 2007.

Water on the Table. Dir. Liz Marshall. March 2010.

The Water War. Dir. Licinio Azevedo. 1995.

f) Plastics & Waste

Addicted to Plastic. Dir. Ian Connacher. Oct. 2008.

Bag It: Is Your Life Too Plastic? Dir. Suzan Beraza. April 2010.

Into Eternity. Dir. Michael Madsen. Jan. 2010.

Garbage Island. Dir. Meredith Danluck. TOXIC. VICE TV. June 2008.

The Killing Ground. Dir. Steve Singer. 1979.

Midway. Dir. Chris Jordan. 2013.

Plastic Bag. Dir. Ramin Bahrani.

Plastic Paradise. Dir. Angela Sun. 2012.

Plastic Planet. Dir. Werner Boote. Sept. 2009.

Redemption. Dir. Jon Alpert and Matthew O'Neil. 2012.

Tar Creek. Dir. Matt Myers. Aug. 2009.

Trash Inc. CNBC Originals. Sept. 2010.

The Warriors of Qiugang. Dir. Ruby Yang. Sept. 2010.

g) Alternative energies

The Fourth Revolution: Energy. Dir. Carl-A. Fechner. March 2010.

h) Energy & Automobility

A Snow Mobile for George. Dir. Todd Darling. Jan. 2008.

Global Car. Dir. Dodge Billingsley. 2009.

Revenge of the Electric Car. Dir. Chris Paine. April 2011.

Who Killed the Electric Car? Dir. Chris Paine. Jan. 2006.

ii. Image (Social Practice, Activist, Performance, First Nations, Curation, Painting/Drawing, Interdisciplinary, Mixed Media, Graffiti, Photography)

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Beer, Ruth. *Trading Routes*. 2015. Web. 12 May 2016.

Bowers, Andrea. *Mercy Mercy Me*. Andrew Kreps Gallery, New York, 24 Oct.-23 Dec. 2009.

Burtynsky, Edward. *Oil*. Royal Ontario Museum Institute for Contemporary Culture, Toronto, 9 April-2 Sept. 2011.

Biemann, Ursula. "Black Sea Files. From Contested Zones of Mobility to Ecology and Deep Weather." *World of Matter*. Web. 12 May 2016.

Belmore, Rebecca. *Ayum-ee-aawach Oomama-mowan: Speaking to Their Mother*. Curated by Wanda Nanibush, Justina M. Barnicke Gallery, Toronto, 9 Aug. 2014.

Dion, Mark. *The Tar Museum*. Tanya Bonakdar Gallery, New York, 28 Feb-13 April 2013.

Feuer, Mia. *Synthetic Seasons*. Contemporary Art Gallery, Calgary, 23 May to 6 Sept. 2015

Durham, Jimmie. *Sprovieri*. Web. 12 May 2016.

Gabriel, Brandon. "Brandon Gabriel | aecdn." *Fraser Region Aboriginal Early Childhood Development Network*. Web. 12 May 2016.

Greenfort, Tue. "Exceeding 2 degrees," *Tue Greenfort*. 2007. Web. 12 May 2016.

Haacke, Hans. *Recording of Climate in an Art Exhibition (1970)*. New York Cultural Centre, New York, 2009.

Hazoume, Romuald. *Rat-Singer: second only to God!* October Gallery London, London.

Helbig, Louis. *Beautiful Destruction*. Web. 12 May 2016.

Jungen, Brian. "Works." *Catriona Jeffries*. Web. 12 May 2016.

Juan, Andrea. "Antarctic Project." *Andreajuan.net*. Ongoing. Web. 12 May 2016.

Kashi, Ed. *The Curse of Black Gold*. Ed. Michael Watts. Brooklyn: Power House Books, 2010. Print.

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- Lane, Cal. "Fossil Fuel." *Cal Lane*. 2007. Web. 12 May 2016.
- LaRiviere, David. "Come visit the Athabasca Tar Sands ... Canada's 8th wonder of the world!" Billboard, Saskatoon, 2012. Mendel Gallery.
- Lenz, Garth. "The True Cost of Oil." *Garth Lenz*. Web. 12 May 2016.
- Liboiron, Max. "Abundance | Max Liboiron." *Max Liboiron*. Web. 12 May 2016.
- Logar, Ernst. *Invisible Oil*. Vienna: Ambra Verlag, 2011. Print.
- Olafur, Eliasson. *Ice Watch Paris*. Web. 12 May 2016.
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- Sekula, Allan. *Black Tide/Marea negra*. Christopher Grimes Gallery, Santa Monica, 7 June – 12 July 2003.
- Sisson, Lindy. "Honour Dance." *YouTube*. 13 Feb 2015. Web. 12 May 2016.
- Banerjee, Subhankar. *Subhankar Banerjee Home*. 2002. Web. 12 May 2016.
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- Turcot, Susan. (2014). "Turning Down the Noise for a Short While: 10 Days Drawing in an Oil Camp." *Susan Turcot*. Web. 12 May 2016.
- Veldstra, Aaron. *Our Anaerobic Future*. FAB Gallery, Edmonton, 2 July-11 July 2015.
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- Walde, Paul. "Requiem for a Glacier." *Paul Walde*. Web. 12 May 2016.
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Yowney, David. *Canadian Oil and Us*. Stuart Macpherson Public Library, Lac la Biche. Nov. 2014.

iii. Design, Sustainability and Awareness

Holmes, Tiffany. *Tiffany Holmes*. Web. 12 May 2016.

“Living Climate Change for IDEO.” *IDEO*. Web. 11 May 2016.

iv. Petrol Advertising

Cenovus Energy. “Energy touches every part of our lives, See what role oil plays in the energy mix.” *More2theStory*. Web. 11 May 2016.

Enbridge Energy. “Life Takes Energy- Enbridge Inc.” *Enbridge*. Web. 11 May 2016.

v. Literature (Poetry, Novels and Theatre)

Adbusters.

Atwood, Margaret. *The Heart Goes Last*. New York: Nan A. Talese, 2015. Print.

Bringinghurst, Robert. “The Focal Length of Fuel.” *Selected Poems*. Port Townsend, Washington: Copper Canyon Press, 2011. Print.

Collis, Stephen. *Once in Blockadia*. Vancouver: Talon Books, 2016. Print.

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The Enpipe Line Contributors. *The Enpipe Line: 70,000km of poetry written in resistance to the Northern Gateway pipeline proposal*. Smithers: Creekstone Press, 2012. Print.

Wilson, Sheena. “Petro-Mama: Mothering in a Crude World.” *Telling Truths: Storying Motherhood*. Eds. Sheena Wilson and Diana Davidson. Bradford, ON: Demeter Press, 2014. Print.

Wong, Rita. *Undercurrent*. Vancouver: blewointment, 2015. Print.

vi. Exhibitions/Curation/Residencies

Banff Centre for the Performing Arts. Budney, Jen. Mendel Gallery. Beneath a Petroliferous

Moon. 2015.

“Kitimat Questions: Energy.” Kitimat Museum. Web. 12 May 2016.

Melancholy Bay: Images of English Bay, Burrard Inlet, and Howe Sound from the Collection. Morris and Helen Belkin Art Gallery, Vancouver, 19 Jun-23 Aug. 2015.

Pipeline: A Line of Division. Two Rivers Gallery, Prince George, 12 April-7 July 2013.

Still Life: Ecology, Art, and the Politics of Change. Sharjah Biennial 8 (SB8), Sharjah Art Museum, Sharjah, 4 Apr-4 Jun 2007.

vii. Critical-of-Energy Collectives

Art not Oil. Web. 12 May 2016.

Center for Land Use Interpretation. Web. 12 May 2016.

Haidawood. *YouTube.* Web. 12 May 2016.

Immersion Emergencies. Web. 12 May 2016.

Liberate Tate. Web. 12 May 2016.

#Nopipelines. *Twitter.* Web. 12 May 2016.

Otolith Group. Web. 12 May 2016.

Preemptive Media. Web. 12 May 2016.

Platform London. Web. 12 May 2016.

The Natural History Museum. Web. 12 May 2016.

National Academies Keck Futures Initiative. Web. 12 May 2016.

viii. Critical Literature

Cariou, Warren. “Tarhands: A Messy Manifesto.” *Imaginations* 3.2 (2008): 17-34. PDF.

Dawson, Ashley. “Documenting Accumulation by Dispossession.” *Critical Landscapes: Art, Space, Politics.* Eds. Emily Eliza Scott and Kirsten Swenson. Oakland: University of California Press, 2015. Print.

Evans, Mel. *Artwash: Big Oil and the Arts.* London: Pluto Press, 2015. Print.

McKee, Yates. *Strike Art: Contemporary Art and the Post-Occupy Condition*. New York: Verso Books, 2016. Print.