



*Earth Common Journal*  
*Vol. 2, No. 1, September 2012*

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## Preface

Lucille Mazo\*

*Managing Editor, Grant MacEwan University, Canada*

Speaking for the Earth is a choice. Acting as a vehicle to voice our understanding, knowledge, and research in relation to the state of the Earth is a privilege. Students are positioned in society to affect change by communicating through the written word, through comprehensive images, and through collective dialogues. When two or more students assemble for the purposes of sharing research ideas and experiences from various disciplines, a cacophony of expectations ensue. It is under these conditions that the conversation about sustainability, conservation, and global warming continues to expand and to be important and critical topics for students to explore and share. To stand in the place that Earth occupies and to consider what Earth may have to say is profound.

*Earth Common Journal's* second issue, "*Who will speak for the Earth?*" strives to continue the ongoing local, national, and international dialogue, discussion, and conversation that is occurring between students, faculty, and community. The conversation about sustainability, conservation, and global warming begins with those who are faced with the current condition of the Earth—students who ponder about human priorities and their effect on the planet. Taking note of this conversation as it transforms into student research driven papers and projects is a signal for society to engage in this overall and complex discussion. Accessing student voices, insights, and observations about the relationship between Earth and humans is an important step to accessing solutions that set the pace for future environmental decisions.

In recognition of the incredible work that students submit to *Earth Common Journal*, three awards are being launched for the first time, and to be offered each year. The award for *Best Cover Design* recognizes a student's interpretation of the issue's theme as it

L. Mazo

is depicted on the journal's cover. *Best Article Award and Honorarium* awards (first and second place) a student for insightful research that applies one or more of the three main focuses of the journal: sustainability, conservation, and global warming. The award for *Best Original Music Composition* recognizes a student's creative and original music piece written for the theme of the issue. All recipients are MacEwan University students.

I invite you to read with conviction the voices of the students whose work comprises this issue. These articles are compelling and the voices contained within them are clear.

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## Cover Design: A Profile of Diana Duzbayeva

Tracey L. Anderson\*

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Diana Duzbayeva is from Almaty, the former capital of Kazakhstan. In 2000, she graduated from the Kazakh Leading Academy of Architecture and Civil Engineering as an environmental economist. Six years ago, she moved to Canada, which has now become her “second home because of its cultural variety and immense hospitality.” Diana’s appreciation of Canada’s multiculturalism led her to volunteer as an assistant English teacher for the Immigrant Women’s Association.

After winning second prize in the “best portrait of a man” category (and two honourable mentions) in the 2009 International Antique Photo Parlour Contest sponsored by the not-for-profit organization Antique and Amusement Photographers International, Diana decided to pursue a career in photography. She chose MacEwan University’s Design and Photography program. As a 2012 graduate, Diana’s main career goal is to become “a documentary photographer and explore and advocate for ethno-cultural communities and environmental issues in Canada and throughout the world.”

Diana’s design for the *Earth Common Journal* cover this year was inspired by the title *Who will speak for the Earth?* She says, “While I was brainstorming for the ideas, I was thinking ‘how can I unite organic design and social media?’ In my graphic, I wanted to illustrate the call for environmental advocacy.” Based on the idea of organic design, she made a decision to hand draw the image rather than create a computerized image. “I wanted all elements to look as natural as possible... Nature doesn’t have perfect geometric forms. Everything in nature is rough and uneven.” Diana’s colour choices reflect a desire to use natural earth tones, and her choice of background references the

idea of recycled paper. Her use of the Earth as the head of the microphone brilliantly illustrates the theme of this issue and showcases the idea that anyone who is ready can take up the call.

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*\*Writer: Tracey L. Anderson is an editor for Earth Common Journal and is currently completing her third year in the Bachelor of Applied Communications in Professional Writing degree program at Grant MacEwan University. She is also a former English as a second language teacher who taught in China, Macedonia, Morocco, and the United Arab Emirates.*

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# **Water Use and Abuse in the United States: behavioural patterns behind excess water consumption and an argument for an efficient demand side remedy**

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## **ABSTRACT**

The last decade saw severe drought in the south-eastern United States, which presented questions about the ways in which Americans use water and the best ways for government entities to handle future drought. During and after the droughts, researchers examined existing literature on water over-consumption and conducted new studies to explore water use and related behaviour. We review the predominant work on the factors that influence household water consumption, the different methods by which government agencies can combat over-consumption, and argue for the demand-side approach of structured rate increases to limit superfluous use of water. An inclining block rate structure both forces consumers to contemplate water use before and during droughts and punishes excessive use through economic means.

## **Part 1: Behavioural Factors Influencing Household Water Consumption**

### **Introduction**

Given the uncertainty of supply and the national growing demand for water, the need for efficiency in water use is significant. However, managing the demand for water requires knowledge of how people use water, as well as in the relationship between psychological and behavioural aspects of water consumption (Gregory & Di Leo, 2003, p. 1262).

This paper examines existing literature on factors affecting water consumption including but not limited to: income, environmental awareness, and government regulation. Specifically, it investigates the psychological elements affecting people's behaviour, and then discusses water management methods to reduce water usage. By understanding psychological factors affecting water consumption, water-managing entities may develop more efficient and sustainable policies.

### **Literature Review**

Obstacles to accurately interpreting and explaining existing literature on water consumption are threefold. First, the bulk of relevant research takes the form of non-peer reviewed technical reports, case studies and consultancy reports (Gregory & Di Leo, 2003, pp. 1262-63). Second, the implementation and outcomes of water conservation measures tend to be context specific such that generalizations are difficult to draw a meaningful framework for future applications (Atwood, Kreutzweiser, & Loe, 2007, p. 428). Third, while issue specific factors constrain water conservation strategies, their theoretical underpinnings are derived from general theories of consumer behaviour developed in non-water contexts (e.g., household recycling, household energy conservation, private goods consumption, etc.).

Models of household water use behaviour, derived from the studies discussed below attempt to predict household water consumption. The success of household water demand management strategies depends on how well we understand the way people think about water and water use. Is water conservation more likely when individuals believe that water is scarce or when they perceive that other consumers are also conserving water?

Studies conducted before, during, and after the southeast drought of 2007-2008 identify a range of factors influencing household water use. Below is a discussion of those factors, including: 1) personal characteristics (e.g., subjective norm, behavioural control, attitude toward the behaviour) (Gregory & Di Leo, 2003, pp. 1261-1296); 2) environmental values and conservation attitudes; and Socio-economic factors (e.g., income, household composition, age, gender, education, etc.) (Jorgensen, Graymore, & O'Toole, 2009, p. 229); 3) Institutional trust (i.e., trust in the water provider) (Corral-Verdugo et al., 2002, pp. 533-35; Heiman, 2002, p. 84); and 4) Inter-personal trust (i.e., trust in other consumers) (Corral-Verdugo et al., 2002, pp. 527-28, 533-34).

### **Psychological Factors**

Gary D. Gregory and Michael Di Leo (2003) studied the existing theory in social and environmental psychology and developed a model to study important predictors of water consumption (pp. 1261–1296). Their study explored relationships between various psychological aspects and water consumption. A review of past research findings allowed them to develop a model that measures the effects of stimuli (e.g., environmental awareness), reasoned processes (e.g., attitudes, personal involvement), unreasoned processes (e.g., habits), and situational influences (e.g., income and household size) on water consumption behaviour (pp. 1262, 1267).

The following factors have predictive ability on water consumption behaviour: environmental awareness, personal involvement, demographic characteristics, and habits and reflexes. Additionally, households with lower water usage and that display greater awareness of water conservation issues are more highly involved in the decision to use water and tend to form habits associated with lower usage levels. These results are consistent with past research that attitudes toward water usage appear to be poor predictors of water consumption behaviour. After controlling for situational factors (e.g., household size), Gregory and Di Leo (2003) findings substantiated the role of personal involvement and habit formation in explaining water consumption (pp. 1266-67, 1277, 1280-86).

The results of Gregory's and Di Leo's (2003) study did not generally support past findings. From existing studies, Gregory and Di Leo found that pro-conservationists are younger and more highly educated than are non-conservationists. Also, higher income families tend to be more involved in pro-environmental activities, have greater concern for the environment, and participate to a greater extent in conservation activities than do lower income families (p. 1267). This finding was also reflected in a study which found that people with a high income, more education, and high status jobs were more likely to

engage in water saving practices (Berk et al., 1993, p. 236, 242-43). However, Gregory's and Di Leo's (2003) results indicated that households with greater awareness and involvement in the decision to use water were older, had lower income and educational levels, and had fewer people living in the household. They assumed the discrepancy between past findings and their findings may be a result of household life cycles, or the different phases of collective household members experience over time (p. 1283).

When behaviours are habitual, it is challenging to change people's attitudes towards their actions. Much of the relevant work in environmental psychology focuses on reasoned influences, such as attitude change, even though the literature cited suggests a weak link between general attitudes and environmental behaviour. Only recently has research on past behaviour habits achieved popularity in environmental psychology. Gregory and Di Leo (2003) suggest that when strong habits exist, persuasive efforts to change attitudes may have little effect on behaviour. Conversely, increasing the level of personal involvement can lead to the consideration of alternative choices and the weakening of existing habits. According to behavioural decision theory, understanding the factors that maintain routine responses is a first step toward developing successful intervention strategies to change habitual behaviour (p. 1285).

Persuasive communications can serve as stimuli to change one's predisposition toward a particular behaviour or motivate one to become more involved in the behavioural process. As Gregory and Di Leo (2003) concluded, "a greater understanding of how awareness affects both reasoned and unreasoned influences will enable water-management authorities to devise more effective environmental awareness campaigns to encourage water conservation behaviour," (p. 1286). Although research in environmental behaviour is abundant, past studies attempting to link psychological variables to conservation behaviour produced mixed findings and are inconclusive. Moreover, the ambiguity of those results could be due to the fact that such research has concentrated on recycling and electricity conservation, with relatively few studies investigating the psychological aspects of household water usage (pp. 1262-63).

### **The Trust Factor**

Conservation motives significantly reduce annual water consumption. University of Sonora Professor Victor Corral-Verdugo, Frias-Armenta, Perez-Urias, Orduna-Cabrera, and Espinoza-Gallego (2002) investigated the factors influencing Mexican citizens' water use and found that people must trust each other and those who supply them water before they will reduce their usage (pp. 527-535). Conservation motives included

reducing the amount of money spent on water, social norms (i.e., neighbours try to conserve water), and wanting to comply with conservation campaigns (p. 530).

People's perception of the amount of water used by those around them often influences their own usage. Corral-Verdugo et al.'s (2002) model found that the perception that others were wasting water decreased conservation motives and resulted in increased water consumption. If people do not trust others to conserve water, they will use this to justify their own lack of motivation to conserve, which results in their own higher water consumption (pp. 527-28, 533-34). Similar to Dr. Garrett Hardin's Tragedy of the Commons, the shared resource, in this case grassland is depleted through self-interested actions. The tragedy of the commons is a dilemma arising from multiple individuals, acting independently and rationally concerning their individual self-interest, but ultimately depleting a shared limited resource even though it is contrary to everyone's interest in the long run. The individual's rational behaviour leads to a situation in which everyone is worse off than they might have been otherwise (Hardin, as cited in Jorgensen et al., 2009, p. 229).

Hardin's classic example is a hypothetical situation about herders sharing a common parcel of land on which they are all entitled to let their cows graze. It is in each herder's interest to put each succeeding cow he acquires onto the land, even if the carrying capacity of the common is exceeded and it is temporarily or permanently damaged as a result. The herder receives all of the benefits from an additional cow, but the entire group collectively shares the damage. If all herders make this individually rational economic decision, the common will be depleted or even destroyed to the detriment of all (Jorgensen et al., 2009, p. 229).

For efficient usage, people must also trust that the water authority is doing all it can to provide enough water. If the public believes water agencies are untrustworthy, they may be unreceptive to initiatives that managers propose as a means of conserving water and securing supply (Corral-Verdugo et al., 2002, pp. 533-35). Water conservation by the public requires institutional trust; willingness to conserve increases with governmental conservation efforts and supply increases (Heiman, 2002, p. 84). People are more willing to save water when they believe the water authority and government are also doing their part to ensure supplies.

The Corral-Verdugo et al. (2002) study also found a disparity between perceived and actual consumption in different sectors. Participants thought that city dwellers use a higher percentage of the water supply than they actually do (31% compared to 8.5%) and farmers use less than they actually do (24% compared to 83.3%) (p. 532). These findings

demonstrate that people's perceptions of how others use water are not in line with reality. Furthermore, their perceptions of how others use water can impact their own water use. When individuals surveyed did not trust others to save water, they felt no obligation to save water themselves. This model suggests that actual water use is influenced by perceptions of how others use water, both wasting and conserving.

### **A Human Connection to Nature**

The problem of overconsumption may also stem from a disconnect between people and nature. Law professor Eric Freyogle, an authority on the issues of human interaction with nature, candidly summed up this gap in the relationship: "We are disconnected from nature in our ethics, our knowledge and understanding, and our behaviour." Freyogle believes Americans engage in environmentally harmful land activities because we lack an environmental ethic that values nature. Instead, we "should seek ecological health in our land practices;" we place too much value on self-gratification, individualism, and "consumeristic" consumption (Arnold, 2005, p. 10171).

### **Public Perception of Water**

Another systemic factor influencing overconsumption is the general public's knowledge deficiency on the most basic information about water. The public's perception of its role in causing or helping to resolve water supply and quality problems is poorly developed. Approximately three-fourths of the public is concerned about household water supply, one-third believes that their supply is "not as safe as it should be," forty percent believe that standards for protecting drinking water quality should be "stricter," and less than one-third of the public know the major sources of water pollution in their communities. Most do not think that runoff from farms, parking lots, or even residences are a major cause of water pollution (Feldman, 2007, p. 276).

### **Outdoor Water Uses**

Outside water use behaviours are important targets for changes in water consumption. Michael Loh and Peter Coghlan (2003) studied water use in Perth, Australia, and found that inside water use is relatively stable across seasons, socioeconomic groups and housing types (p. 1). The only differences were dependent on household size and appliance ownership. Additionally, 56% of Perth's household water use is for purposes outside the dwelling (pp. 25, 27).

Professor Geoff Syme, Blair Nancarrow, and Clive Seligman, (2000) specifically investigated outdoor water use and discovered that lifestyle (e.g., importance to lifestyle



of large garden, large lawn, green home environment, etc.), recreation in the garden, and enjoyment of gardening are all interrelated and contribute to higher water use (pp. 539-78). Syme et al. (1990-1991) measured homeowner's attitudes against their actual water consumption for a year. They found that attitudes pertaining to garden importance as a house investment and a source of recreation, expenditure on garden, and attitude toward water price were all significant predictors of household water use (pp. 167-68).

People exercise greater choice in reducing outdoor uses of water than indoor uses. A plurality of studies show that people are more conscientious in reducing lawn irrigation or washing cars than they are in showering or flushing toilets. Effective demand-side management strategies should focus on changing garden water use behaviours among households that highly value gardens, in combination with increasing prices (Feldman, 2007, p. 299).

### **Promoting Behavioural Change in Water Use**

By understanding the effects of psychological factors on consumption, water management authorities can better identify solutions. Having identified factors influencing water behaviour, we now examine methods to change behaviour. In the process of encouraging behaviour change, we recommend employing demand-side strategies.

Communication gives people a reason to cooperate in reducing water usage because it gives them the opportunity to make explicit commitments and promises about what they will do. More specifically, it offers an opportunity for moral persuasion, or an appeal to what people believe is the right thing to do. Communication facilitates cooperation. Cooperation increases significantly when individuals are given the chance to talk with each other. Communication and cooperation provide communities with a sense of social responsibility; individuals recognize a shared interest and trust that their neighbours will also conserve water (Atwood et al., 2007, p. 534). Cooperation provides the individual consumer with a group identity. Group identity in turn encourages cooperation among members.

The availability of water saving technologies is essential. Clarke and Brown (2006) investigated the receptivity within a community to using alternative water sources and technologies and found that demographic influence was weak, but the ability and capacity of individuals to acquire and apply household water saving and reuse measures is a fundamental factor for behavioural change (pp. 251-58). Upon further investigation, they discovered that simply having the ability to purchase more water saving devices contributed to water saving behaviours.

Education is also important; “the public is generally inclined to learn more about water problems if the opportunity to do so is afforded them” (Feldman, 2007, p. 277). David Feldman (2007), author of *Water Policy for Sustainable Development*, argues that education helps teach consumers and the public what is involved in keeping water flowing from the faucet. Conservation alone may not be enough, but ignorance is a significant factor in over usage. Encouraging conservation is difficult because the general public is unsure where and how it derives its water and thus fails to realize its role in water demand and its potential role in saving water (p. 299). Conservation requires education and greater information about water use and the public’s effect on the water supply. Water providers can employ a dissemination of knowledge to inform consumers about the need to change behaviours relating to conserving water, and give them suggestions on how to do so.

### **Part I - Conclusion**

Part one of this paper reviewed five major models of household water consumption, and found that while many studies highlighted different factors acting on water use behaviour, none of them attributed all of the variation in water use to the factors they examined. There are other variables impacting water use that this paper has not yet visited.

Trust is an important factor that has not been fully explored but that can be useful in the development of effective water management strategies. Trust in the water authority and trust among community members (including residents, farmers, and industry) to take steps to reduce their water consumption will increase the likelihood that people will actively reduce their own water use. Therefore, these two kinds of trust are essential to engender a water saving response from the whole community and to ensure the success of water demand programs. But how can we measure trust? Further investigation is needed to determine the exact role that trust plays in determining household water use behaviour.

We now address questions about the interactions between water management pricing strategies, water restrictions, restrictions in water supply, and individual motivations to conserve water, for practical, broad applications.

## **Part 2: Conservation through Water Management Policies**

There are three major players in water management: the people and organizations who use water; the entities that distribute it; and the different levels of government that regulate it. This section discusses the major methods by which that last group, the regulating agencies, deal with excess water consumption, especially during droughts. They must balance the psychological and sociological factors behind water consumption against the need to conserve water. After detailing the methods of water management, a way in which regulating bodies may both conserve water and generate revenue to help prepare for future water shortages will be proposed.

### **Methods of Water Management**

There are four major methods of water management: mandatory restrictions on usage; rebates and giveaways; educational programs; and rate increases. Each method has benefits and detriments, but one method, rate increases, has far-reaching economic and financial benefits that outweigh its detriments and allow government agencies to restrict water use in a transparent, efficient way.

#### **Mandatory Restrictions**

Water regulating entities may restrict water use by residents and businesses using criminal penalties such as fines as a disincentive to excessive usage. This is a very common method of regulation, and several urban areas in the southeast United States employed mandatory restrictions during the drought of the late 2000s. Several cities banned lawn irrigation. The City of Raleigh, North Carolina banned most car washing, filling new swimming pools, and serving drinking water at restaurants unless requested by diners (Manuel, 2008, pp. A 170-171). In Georgia, Governor Sonny Perdue urged Georgians “to make their dry lawns and dirty cars a badge of honour” in October of 2007 (P A 170).

The advantage of mandatory restrictions on water usage is that it usually works — at least in the short run. The fear of legal penalties prevents citizens from using water for any non-essential purposes. Northern Georgia, including Atlanta, experienced a 13.3% decrease in water usage from 2007 to 2008 after implementing restrictions on use (Manuel, 2008, p. A 170).

The major disadvantages of mandatory restrictions are two-fold. First, they are only successful in the short run. Political pressure from upset water users can coerce elected officials to alleviate the severity of the restrictions, or lift them entirely. Policy makers,

understandably weary of a dissatisfied constituency, are vulnerable to the whims of those who want to use more water than is reasonably available during a severe drought. After Georgia's initial success with mandatory restrictions, the state completely dropped all penalties against power plants, citing the importance of the state's power grid (Manuel, 2008, p. A 170). Giving in to such pressure can curb governmental efforts to conserve water.

The second disadvantage of mandatory restrictions is the fatal flaw that exists in many types of criminal penalties: if individuals believe that the benefit of breaking the law outweighs the consequences, they will break the law. A wealthy homeowner who has acres of property (the type of person likely to need lots of water to irrigate her lawn and landscaping) may have the resources to pay a fine for excessive use. Conversely, to an indigent person who lives in a small apartment and does not own a vehicle, the fine is not only un-payable but also irrelevant; he or she will never violate a restriction against irrigating residential property. Policymakers can curtail this disadvantage by implementing harsh penalties against excessive water use, but then they must face the threat of a disgruntled constituency.

### **Rebates and Giveaways**

Devices such as low-flow toilets, shower heads, and faucet aerators can significantly reduce household water usage, and many regulating agencies either directly offer rebates or subsidize the use of water conserving products. Low flow products successfully reduce usage, but have historically shown mixed results due to government budgetary constraints or the sheer severity of a drought. After discovering that fitting existing homes with water saving devices reduced household usage by about 46%, the City of Tampa offered citizens \$100 on low-flow toilets. From 1993–2005, the subsidy helped replace 33,765 toilets and saved about 434 million gallons of water each year. However, the program costs \$3,000,000 during those twelve years, and ended in 2008 due to budget constraints (Manuel, 2008, p. A 170). Santa Barbara, CA, in the middle of a severe drought in 1988, gave away free low-flow showerheads and offered rebates for low-flow toilets. However, the drought (during which rainfall levels fluctuated from 94 percent to 30 percent of historical norms) persisted, and the city eventually took up more severe methods of regulation, including increased rates and mandatory restrictions (Renwick & Archibald, 1998, p. 348). Water saving household devices are certainly a part of the long term solutions, but they cannot combat a drought in the short run.

## **Educational Programs**

Different levels of government sometimes organize educational programs to teach citizens why they should conserve water and how to do so. For example, the EPA funds the “WaterSense” program, which shows attendees how to cut their usage by 20% (Manuel, 2008, p. A 170). Major problems with these programs (or any government-ran educational program) are that: 1) they often require participation, or at least high amounts of reading, effort, etc., which discourages working adults from partaking; and 2) people do not always trust government entities to instruct them on how to use a resource such as water.

The fourth method of reducing usage is increasing the monetary costs of water. Economists contend that as prices increase, the quantity demanded, or amount of water used, will decrease (Mankiw, 2009, p. 7). Therefore, as water suppliers increase prices, people should use less water. Several municipalities used this method successfully during the recent drought in the south-eastern United States, and it is arguably the most efficient solution to over-consumption in both the long term and the short term.

Conservation-minded rate increases commonly take two forms: inclining block rates or seasonal rates. The former charges water users an increasing rate as their usage increases. (Figure 1 shows a simplified hypothetical schedule to demonstrate the desired effect of inclining block rates.) Regulating bodies can increase the overall price of water so that any amount used during a drought costs more than water prior to a drought. Seasonal rate increase prices by larger amounts at times of the year when aquifers and streams are especially vulnerable. Either way, regulators can encourage citizens to conserve water by threat of higher costs (Georgia Environmental Protection, 2007, pp. 8-9; Borisova & Rawls, 2010, pp. 16-17).

The obvious detriment of increasing water rates is the risk of a disgruntled citizenry. As with mandatory restrictions, Americans do not like government entities affecting their household budgets. While restrictions regulate their actions, increased rates act on their wallets. However, the nature of increased rates makes it less offensive than mandatory restrictions because it gives water users some freedom to control how much regulation affects them; if they conserve water, they will not be charged higher rates. It is not as intrusive as Raleigh’s “water police” citing people as criminals.

## Efficiency of Rate Increases

A rate increase can have the benefit of decreasing water usage (see above), but it also can be an important tool for government agencies to raise funds. Those funds could be used to directly combat the effects of drought, or for any other public welfare project.

Governments raise revenue through taxes, and a government-imposed rate increase for water is a type of tax. In Figure 2 (Appendices), a population's aggregate demand (D1) for water is a downward sloping line because people will consume less water as prices increase. It is a steep line because the demand for water is 'price inelastic', meaning that changes in price do not have as great an impact on water as on some goods. It is, however, somewhat affected by price changes. Notice also that there is never a point at which consumption equals zero (D1 never crosses the horizontal [price] axis); no matter how expensive, people still need water. In this hypothetical, water costs one dollar per gallon (P1), and consumers will purchase fifty gallons (Q1) at that price. Everything else remaining equal, that is the amount of water citizens will use. In Figure 3 (Appendices), a regulating entity has doubled the price (P1 to P2), and quantity demanded has subsequently fallen to forty gallons (Q2).

A major criticism against rate increases is the inelastic nature of water. However, water is not perfectly inelastic, and is therefore still sensitive to price changes. Rainfall and temperatures determine the supply of water, but utility providers exercise some control over it because of their ability to use dams/reservoirs and by controlling the amount of water they extract and process for human consumption. In the hypothetical, the rate increase has successfully decreased water usage. The decreased quantity of water demanded illustrated in Figure 4 (Appendices) is a simplified but realistic representation of the effectiveness of rate increases in "real world" scenarios. Figure 4 illustrates the revenue generated by charges attached to water rates. This amount can also be found with a simple equation: *Quantity X Price of the Increase = Revenue*. In this hypothetical,  $40 \times 1 = \$40$ . In an actual city, county, or state-wide economy, this would obviously be a very large amount. Legislative bodies, when enacting a rate increase, can earmark future revenue generated by the increase to benefit the people who pay the rates. If water users can see direct benefits from the extra funds they pay, they may not be so quick to condemn rate increases. They will still not want to pay more for water, so usage should decrease, but they may be more willing to accept governmental action, even if it means financial consequences to individuals.

## **Possible Use of Revenue Generated from Rate Increases**

Revenue generated by increased rates should be spent mitigating the effect of current and future drought. The former can be achieved through bailouts for industries hard hit by drought (e.g. local agriculture and tourism) and the former through investing in sources of electricity that are not derived from water or fossil fuels. The benefit of promoting non-hydroelectric energy in hydroelectricity dependant drought-prone regions is obvious: during times of drought, the source of the region's electricity often dries up with the rest of the region's water. The reasons for promoting non-fossil fuel sources of power in those regions are not as obvious but just as vital.

Drought in the twenty first century is part of a cycle that begins and ends with fossil fuels. The burning of fossil fuels and the consequential warming of the planet's atmosphere lead to higher average temperatures, which in turn lead to higher rates of evaporation. Evaporation, when spread over an entire region, dramatically worsens the effects of a drought. The problem becomes not only the lack of rainfall, but also the decreasing amount of water already held in groundwater, lakes, and streams. As that water decreases, hydroelectric sources fail, and energy providers are forced to compensate by burning fossil fuels (Manuel, 2008, pp. A 168, 170). Revenue generated from rate increases could be used to promote alternative fuel sources. The alternative sources can be used now to alleviate the current state of global warming, and later, in times of drought, to offset the loss of hydroelectricity.

## **Conclusion**

There are four major methods of water management to reduce water usage during droughts; of those four methods, increasing rates that citizens pay for water is the most viable in the long term. Not only can it decrease water usage, but it can also increase revenue. Government entities can use the additional revenue to benefit the people who contributed to it: and should use it to curtail the effects of future drought.

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## Appendices

Figure 1

Hypothetical Simplified Inclining Block Rate Structure			
Gallons of Water	Rate	Change from Starting Price	Price Max
0-100	\$.01/gal	--	\$1.00
100-200	\$.02/gal	+100%	\$4.00
200-300	\$.03/gal	+200%	\$9.00
300-400	\$.04/gal	+300%	\$16.00
400-500	\$.05/gal	+400%	\$25.00

Figure 2

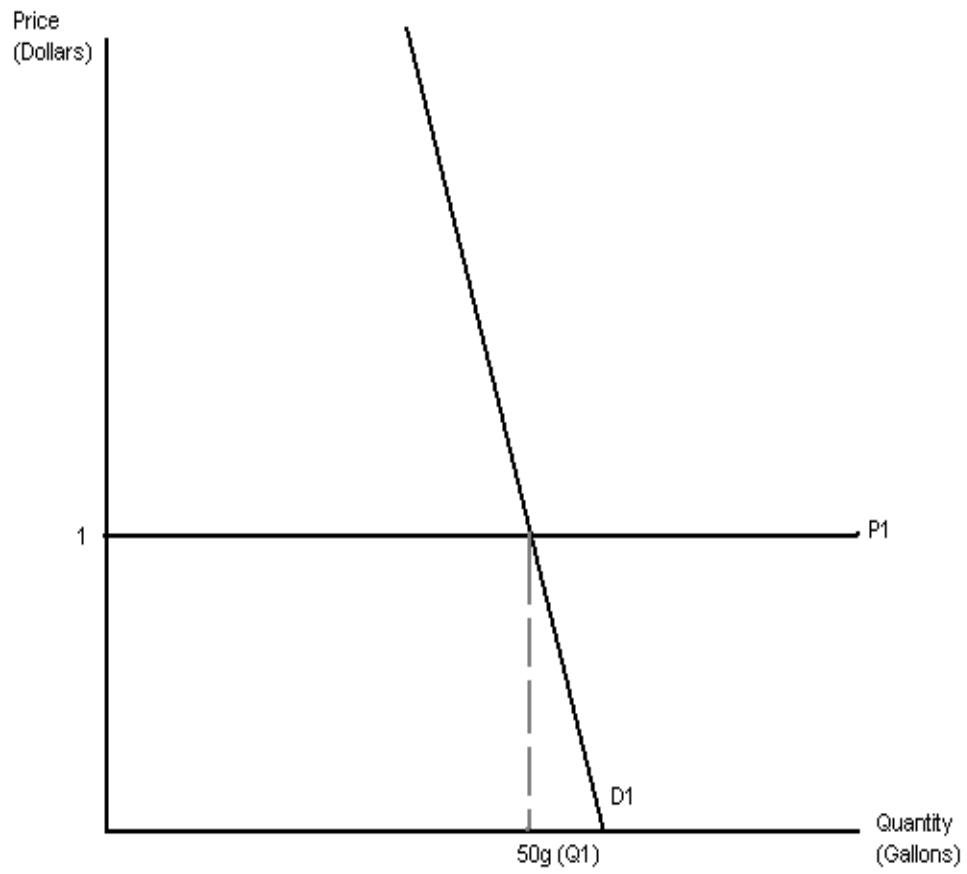


Figure 3

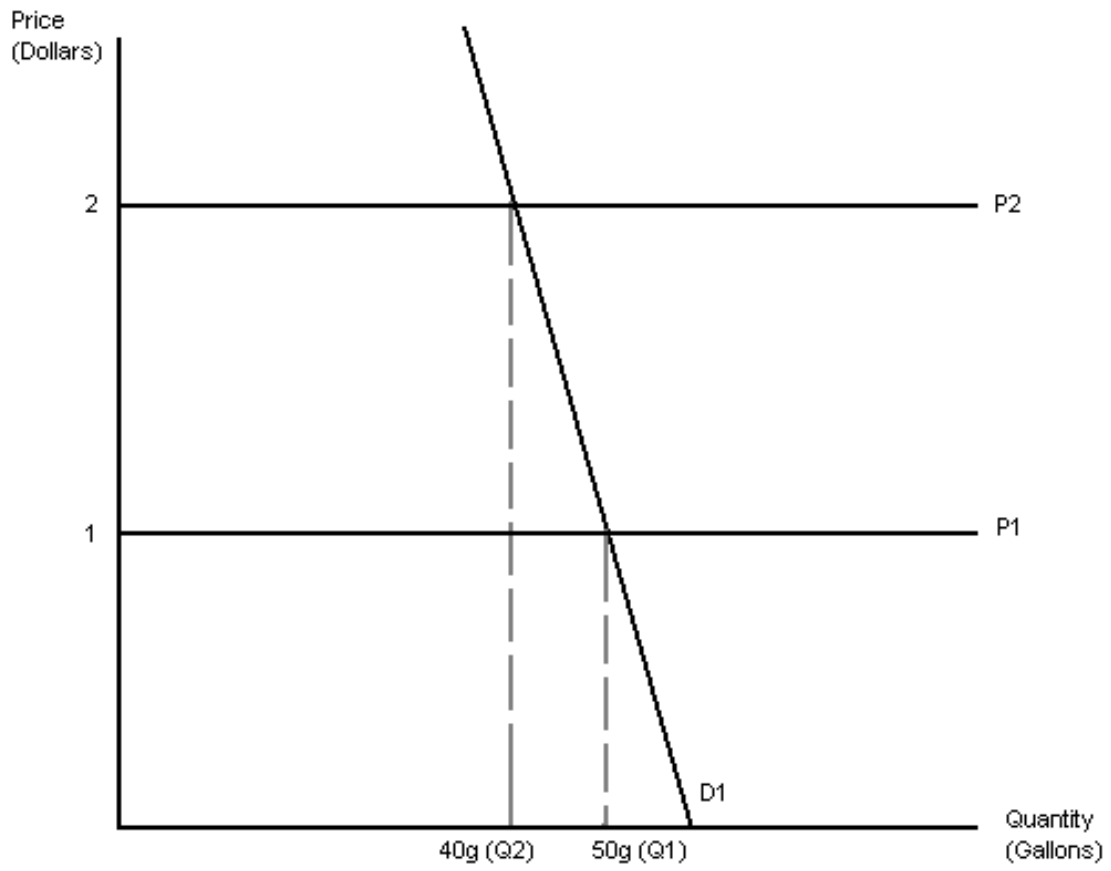
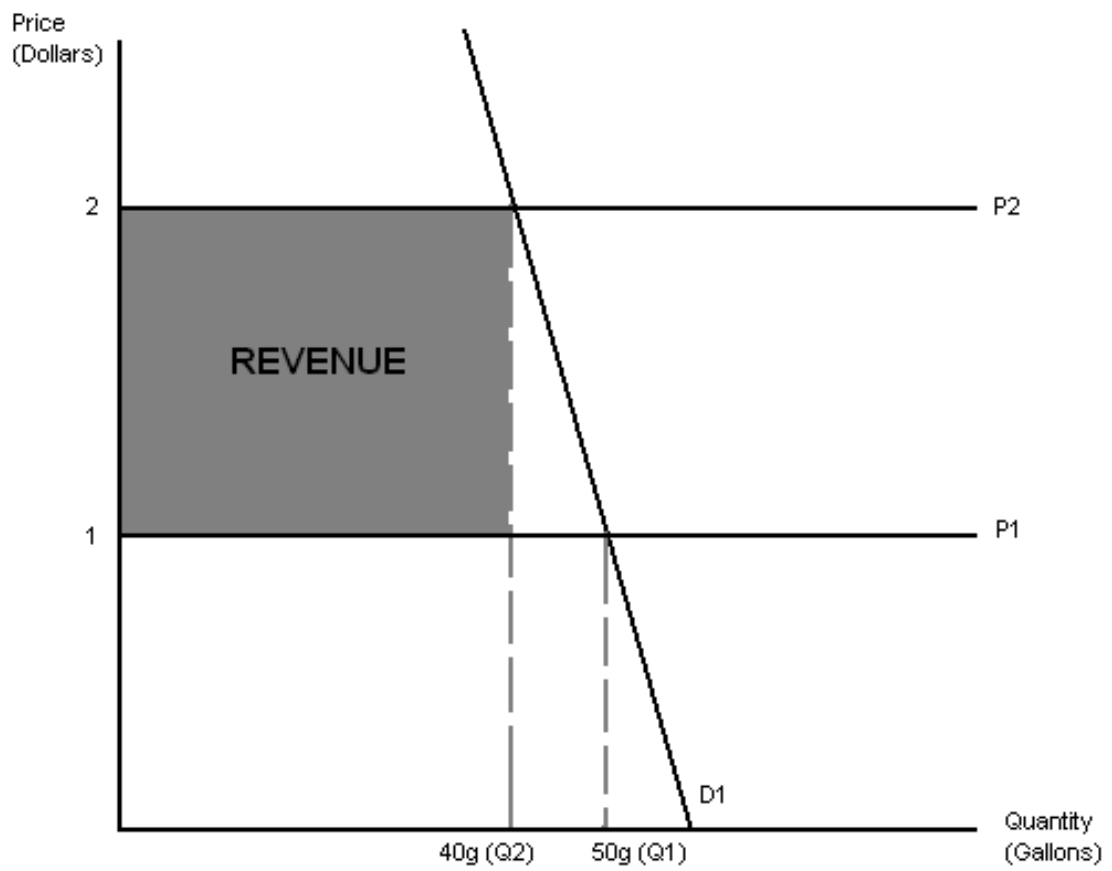


Figure 4





# Communication Breakdown: The Media Effects on Ecuador's Environment

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## ABSTRACT

Environmental communication is an essential part of any society; it informs the population of new occurrences and happenings nearby, and around the globe. As technology evolves, so do the methods in which humans communicate and comprehend. The ways environmental issues are presented to and perceived by the public have increasingly influenced their decision making and continue to affect the way people live their lives. But what role do media outlets play in the environmental awareness of their audience? This research study demonstrates the importance of environmental communication in Ecuador and the various ways in which it can be distorted or controlled. It is critical that individuals are aware of their country's actions and reactions to the environment, as well as their own personal footprints within it. Researching the media in Ecuador, alongside the population's reaction to it, shows how important media is to the environmental awareness of its citizens, as well as their attitude towards conservation.

## Introduction

As the world's population rises and resources deplete, it is important that citizens are aware of the decisions regarding the allotment of resources, as well as the internal and external behaviours of their government. The condition of the planet has become a major issue over the last few decades and continues to grow in public and political

interests. But what role do media outlets play in the environmental awareness of their audience? Humans no longer live in a world of confinement, but instead a world of interconnectedness where actions affect more than just those who commit them. Because of an increasing demand for resources and the unavoidable repercussions that follow suit, such as war and human suffering, it is imperative that individuals are informed and aware of the current environmental situation. With the mass media being a major component in the distribution of this knowledge, it would seem essential that it is available to all those who desire it. Yet, with a closer examination of the distribution of knowledge and information within a population, it is evident there is a clear disconnect.

Focusing on some of the environmental issues affecting our planet, such as deforestation, water contamination, and the consumption of Earth's fossil fuels, humans can see how a lack of communication in the environmental sector could lead to some unwarranted occurrences to take place with little to no confrontation. When people are uninformed or unaware of what is taking place in their own country, it is difficult for them to say or do anything about it. As a result of this unknowing, a country can be devastated by external and internal influences, as is the case in Ecuador. With one of the highest biological diversity in the world, Ecuador is a prime target for the acquisition of resources. A major exporter of both oil and timber, the country has been constrained to destroy its ecosystem, due to decades of financial and administrative instability (Rochlin 2011), for its economic well-being. This disregard for preservation by Ecuador's population is not purely an act of malice or greed, but an act of survival. By examining Ecuador's development in the sectors of extraction and communication, coupled with data collected in Ecuador, this research study explores the potential correlation between limits or manipulation of communication within Ecuador, and the environmental issues it faces today.

## **Background**

The Republic of Ecuador is a South American country that shares a border with Columbia and Peru, and is both a diverse and valuable part of the planet. With a turbulent history of development, Ecuador has been "marked by a pronounced reliance on the primary sector, from cocoa to bananas, and most recently to a focus on the extractive industry within the context of the global commodity boom of the new millennium" (Rochlin, 2011, p. 11). With a strong dependence on extractive activities, such as oil extraction, deforestation, and mining, Ecuador's economy relies significantly on the exportation of these resources and the revenue it generates—primarily the oil

sector which “typically accounts for 50%-60% of the country’s export earnings, 15%-20% of GDP, and 30%-40% of government revenues” (U.S Department of State).

It is difficult for a country like Ecuador, with a heavy reliance on extractive revenues, to eliminate its major sources of income; however, it is not what is being extracted, but how it is being extracted and at what cost that are of concern. The majority of oil in Ecuador is situated beneath its tropics. This large scale destruction of Ecuador’s tropical areas is a global concern, as the Amazon rainforest plays a significant role in climate change, global weather, and oxygen production (Britannica Encyclopedia, 2012). In 1989, a government study reported that “spills from flow lines were dumping an estimated 20,000 gallons every two weeks. As well, in another study in 1992 the government recorded 30 major spills totalling 16.8 million gallons of crude oil. About 30 billion gallons of toxic wastes and crude oil are estimated to have been discharged into the *Orient*” (Rochlin, 2011 p. 20). With media being an important link in informing the public, the possibility of important environmental information being distributed unevenly amongst Ecuador’s citizens is significant. It is difficult to believe a population would allow its government to commit large scale ecological damage with minimal opposition; however, in an underdeveloped country where private operators dominate



Figure 1. Inspiration found in the Ecuadorian Amazon

the media and the majority of the population rely on private radio (CIA Factbook, 2007), one of the factors that has enabled such actions to take place virtually unchallenged is the lack of information that has been provided to the citizens with respect to environmental activities.

Although Ecuador has strived to maintain a level of stability in the past, the country has recently started to see progress in many fields. Ecuador’s communications have improved over the last few years as the country has seen a marked rise in usage and accessibility. Media consumption has risen steadily since 2006, with a 600% increase in broadband internet subscribers between 2008 and 2009 (CIA World Factbook, 2009). Still, with a steady rise in technology and communication, a developing nation has difficulty providing these



services to everyone, particularly the rural areas outside the major urban centers. This is the case for many individuals and can become a burden to those who live in areas without access who wish to have a global voice.

## **Discussion and Results**

With a growing reliance on media and technology, individuals have compromised their ability to interpret messages according to their own learned beliefs and values. According to Trenholm (2011), this reliance to media and technology is part of a powerful effects model, “where receivers are relatively passive; they accept media messages at face value and unconsciously allow media sources to tell them what to do” (p. 287). This is a major issue in societies today, as people are influenced by what they hear and see on television or radio. A reliance on technology is a reliance on convenience. People who rely on convenience no longer feel the need to seek out their news or information, but rely on quick and accessible sources for reference. The majority of these sources, although reputable, have moved individuals to become more involved in popular affairs, while simultaneously shutting them off from issues they consider unimportant. This limited scope of information is a consequence of convenience.

## **Research Methodology**

In this mixed methods research study, statistical and interpretive methods of scientific inquiry needed to answer the study’s research question were examined: What role do media outlets play in the environmental awareness of their audience? With a balance between quantitative and qualitative research, triangulation of data was achieved. When comparing observations (e.g. local media usage) to previously documented statistics (Encyclopedia Britannica, 2012; CIA Factbook, 2007; Rochlin, 2011), it allowed for more in-depth data and conclusions.

The quantitative sample strategy consisted of a collection of statistics compiled from multiple scholarly peer-reviewed sources. The major focus points for the quantitative samplings included a collection of recent statistics demonstrating the popular media usage throughout the region, as well as recent statistics and/or news concerning Ecuador’s ecosystem, and local environmental happenings. The qualitative sample strategy was a typical case which consisted of interviews completed by a questionnaire developed specifically for the study. The interviews were conducted face-to-face with four participants. The intention of this sample was to acquire local insights on the environmental situation in Ecuador combined with popular media usage. The extent of

the proposed sample was minimal due to time restraints. Sample participants were chosen based on communication skills and availability. Fieldwork was conducted in Ecuador in the form of interviews with locals who were able to read/write/speak English. This allowed the data collected from their responses to be clear and accurate.

Table 1: Total Sample Results

Total Sample Results of the Study	
Questions	Results
1. What local media do you use (i.e. TV, radio, internet, newspaper) to learn about what is happening in Ecuador?	<ul style="list-style-type: none"> <li>Irrelevant of their location (urban or rural), the major source for news and information amongst the participants was the internet.</li> </ul>
2. Do your local media report information about the environment in Ecuador?	<ul style="list-style-type: none"> <li>Yes, local media report information about the environment, but only major issues and events.</li> </ul>
3. How does your government communicate environmental decisions within Ecuador?	<ul style="list-style-type: none"> <li>The government often discusses the positive attributions they make for improvement with a focus on major issues.</li> </ul>
4. What are your thoughts on Ecuador's ecosystem and environment?	<ul style="list-style-type: none"> <li>Even with initiatives pushing for conservation and protection, the overall outlook is unfavorable as progress in all fields is dilatory.</li> </ul>
5. If you could, what would you change in the way that environmental information is communicated in Ecuador?	<ul style="list-style-type: none"> <li>A system of communication which is administered, and not governed, would help eliminate the manipulation and corruption of information.</li> </ul>

In this section, the results from the interviews conducted while in Ecuador using the questionnaire, *The Media Effects on Ecuador's Environment Questionnaire*, are presented using the responses from all (four) participants. All participants interviewed were over 18 years of age, and had been living in Ecuador for more than three years. Participants One and Two lived in rural areas in Ecuador's Amazon, while participants Three and Four lived in urban centers.

### Media in Ecuador

*The Media Effects of Ecuador's Environment Questionnaire* consisted of five questions which focused on the participant's standpoint on Ecuador's current media, and environmental stance. Questions 1 and 2 focused on the participant's media usage, TV, radio, internet, newspaper, and were used to determine which media was the most reliable and accessible for them. Questions 3 and 4 were aimed at the participants

understanding of the current environmental situation within Ecuador, and asked how their government communicated environmental decisions regarding Ecuador's ecosystem and environment. Question 5 was used to determine what the participants believed would be a more successful way of communicating environmental information within Ecuador than the current system.

The results of each question are presented below.

*Question 1:* What local media do you use (i.e. TV, radio, internet, newspaper) to learn about what is happening in Ecuador?

All (four) participants stated that the internet was their primary source for news and information in Ecuador. Participants One and Two claimed that due to their remote location in the Ecuadorian Amazon they had very few options other than the internet, public radio, or television, and that the majority of inhabitants who occupy similar areas, who do not have access to the internet, rely on radio or television for news. Participants Three and Four stated that they use a variety of media in their urban centers, including local and national newspapers and television stations. However, the internet was the most popular source of media for all participants.

*Question 2:* Do your local media report information about the environment in Ecuador?

When asked about the environmental coverage by local media, all participants claimed it was a popular issue in Ecuador, but only major events were a topic of discussion. When asked about his local media, participant Four claimed that "stories deemed insignificant such as minuscule oil spills, small scale deforestation, and human grievances, were seldom discussed." All (four) participants stated that both public and private spheres of the media include ecological elements in their reports; although some sources, such as television and newspapers, contain more than others.

*Question 3:* How does your government communicate environmental decisions within Ecuador?

As a fundamental issue of discussion in Ecuador, the environment should be a major concern for most Ecuadorians. The general consensus among the participants was that the local media within Ecuador is "biased, watered down, and not worth watching/reading/listening to" (participant Three). Each believes the information released is administered by the government — which does not allow for many opinion pieces or freedom of the press. Within the two sectors, the participants found that the public sphere generally discusses the positive aspects the government does for the

country, reluctant to release any details of negative occurrences. Participant Four believed the public sphere “acts as a cheerleader for the government; telling you all the positive things they do for Ecuadorians. The public sphere is reluctant to say negative things, relying on the positive attributes, such as infrastructure and medicine, in order to suppress the minute negative aspects.” The participants believe that because the government is influential in so many of the media outlets, it causes parts of the country to receive a constant flow of propaganda.

*Question 4:* What are your thoughts on Ecuador’s ecosystem and environment?

The overall attitude of the participants towards Ecuador’s current environmental situation was dismal. Each believed that things are heading in the right direction but with very limited progress. With the Amazon being allocated in sections to the oil companies, participants One and Two believe it is only a matter of time before the entire Amazon is desecrated. With one of the highest biological diversity in the world, they would like to see a much larger focus placed on the preservation and protection of Ecuador’s natural habitat. Participant Two, when asked about the state of the *Orient*, and the destruction being caused by local residents claimed that, “Ecuador loves life, but when it comes down to it, people will do anything it takes to survive, even if that means destroying what they love.”

*Question 5:* If you could, what would you change in the way that environmental information is communicated in Ecuador?

All (four) participants believe that the current system of communication in Ecuador is inconsistent. They feel that the media needs to look at the whole picture and not just focus on small facets of issues, but inform the population of the current issues that affect them, and everyone around them. This question, in particular, caused the participants to become quite emotional, as they were very passionate in their responses. A reoccurring response from all [four] participants was the need for more sustainable development and a greater interest in environmental education. Participant Three said there is a need for more initiatives, such as the *ITT International Initiative* meant to preserve the *Yasuni* national park in the Amazonian Ecuador, and create a better market for green technology.



Figure 2. Ecuador's capital city, Quito, on the edge of the Amazon

## Results

### Freedom of the Press

People do not have time to read, watch, or listen to everything that takes place around them; sometimes they make more of an effort than others, but most of the time people rely on the media to fill them in with what is going on. The problem with a high population dependency on local media is that any manipulation or corruption that takes place within the system can have serious side effects on the general public.

Ecuador has grown significantly in the media department over the last few years, with online accessibility at a significant high, and online subscribers growing annually. However, this dramatic spike in online usage is not directly caused by the introduction of new technology, but is the response of a population skeptical of their government's influence on the information released. According to Rochlin (2011), "the Ecuadorian government in December 2009 temporarily cancelled the radio broadcasting licence for the *Shuar* Indians, who had used broadcasts to protest against planned oil and mining activities in the province of Morona Santiago" (p. 31). This demonstrates the government's ability to control what is being accessed or broadcasted by the population, and an example of manipulation within the government.

Participant Four in the interview process stated that "verbal and legal attacks against the press by President Rafael Correa and his government increased significantly during the year 2009, causing relations between the press and the government to deteriorate and reports of indirect censorship and self-censorship to increase." This has become a major

topic of discussion within Ecuador as the issue has received international attention. An article in the July 2011 issue of *The Economist* discusses Ecuador's President, Raphael Correa, taking a columnist from El Universo, Ecuador's largest newspaper distributor, to court for allegedly defacing him in a recent article. A judge ended up ruling in favour of Correa sentencing the columnist, and El Universo's three directors, to three years in prison and ordered them to pay \$40 million in damages (The Economist, 2011, para. 4). It is due to the legal actions taken by the government that have caused an automatic censorship to take place amongst the local media in fear of being reprimanded. This fear of government encroachment has affected the quality of news being released within Ecuador, and has silenced the opinions of many journalists.

This issue is a major reason why the participants chose not to rely on local media for updates on news and information, but looked to alternate sources, such as the internet and national news stations, in order to access their information. This leaves individuals with limited access to alternate media sources outside of Ecuador unable to freely choose where and how they receive their news and information.

### **Media Accessibility**

The world changes perpetually before our eyes, and so do the various ways in which we communicate and comprehend within it. We are living in the age of technology, and are either blessed by its evolution or cursed by it. With advancements in communication technology it would seem reasonable that everyone would have the opportunity to know what is happening around the world —let alone their own backyard. Yet, with so many mediums available, it is hard to believe that there are people still unaware of the activities that go on around them. Media is an important link that allows people to be informed and make intelligent decisions about how to live their lives. When you lack this information, it is difficult to take action.

The National Basin of Ecuador has a population of about 500,000 people, or just five percent of the country's total (Rochlin, 2011, p. 30). This small portion of Ecuador's population lives in an area of the county where access to technology is limited or otherwise non-existent, which causes the political interests and opinions of those in the area to be overlooked. The deficiency of communication throughout the remote regions of Ecuador cause issues within the community, as people, and their opinions, tend to be ignored because they lack the necessary tools to communicate them. A separation in technology eventually leads to a separation in community as individuals go unheard, and unnoticed. With the vast majority of extractive activities taking place in the *Orient*, away from any major centers, it would seem essential that the individuals who occupy these

areas would have the opportunity to voice their concerns regarding the environmental situation as it affects them firsthand. Yet, with limited access to communicative technologies they have become trapped in a precarious existence with little to no help.

The issue of separation within the community is apparent between the rural and urban populations in Ecuador. The distinguishing element of the two, in terms of media, is the superior quality and quantity of media available to the urban communities at any given point. With media outside the major cities of Ecuador being so scarce (due to small populations) there is a reliance on public television and radio for news and information. There are no other alternatives available to individuals without internet access who want to seek alternate viewpoints, or to voice their own.

## **Conclusion**

The Earth is changing at an accelerating rate, so it is important that humans consider their role in the process and remain humble to its activities. When examining environmental issues, it is implausible to link every event to human behaviour, but it is not prudent to dismiss human involvement all together. Human activities affect the planet in some form or another, so it is imperative that people are aware of their impact, and recognize the things they can do, or avoid doing, to reduce that impact. However, not all environmental issues are thought to be of social, political, or legislative importance. Problems and issues become recognized through talk, communication, and discourse, which define or constrict them as problems or issues for public and political concern (Hansen, 2010, p. 8). As communication plays an increasingly important role in the environmental awareness of the Earth's population, it is imperative that these systems of communication are regulated and controlled in order to eliminate manipulation. It is only by working together as a unified society that the people's perceptions of the Earth will turn from profit — to protect.

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*\*Writer: Sean da Silva in a second year student from the Bachelor of Communication Studies program at Grant MacEwan University, Canada. He has a keen interest in human behavior and cultural studies, and is an extensive world traveller. He is passionate about the environment and strives for a prosperous, more sustainable future.*

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# Discovering the Future Canadians Want: Insights from the We Canada Cross-country Tour

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## ABSTRACT

In 1972, the first United Nations Conference on Human Environment (UNCED) was held in Stockholm, Sweden. At the conference, government officials from industrialized and developing nations met alongside civil society organizations to create the United Nations Environment Programme (UNEP). “This conference put environmental issues on the international agenda for the first time, and marked a turning point in the development of international environmental politics. It has also been recognized as the beginning of modern political and public awareness of global environmental issues” (Baylis & Smith, 2005, pp. 454-455).

Twenty years later, the United Nations Conference on Environment and Development (UNCED), also known as the Rio Earth Summit, was held in Rio de Janeiro. One hundred and seventy two government officials participated, of which 108 were heads of state (United Nations, 1992, United Nations Conference on Environment and Development, para. 1). This conference was one of the largest gatherings of heads of state, civil society organizations, and individuals in human history to date. Stakeholders met with the purpose of charting a course for a more sustainable future. From the conference emerged agreements, most notably Agenda 21, which created a

framework for developing global, national, and regional plans for sustainability. The Rio Earth Summit has since stood as an example of what is possible when governments and citizens work together. The outcomes of this conference still affect human lives today, mainly through the United Nations Framework Convention on Climate Change meetings, which led to the Kyoto Protocol, the only legally binding agreement to cut down carbon dioxide (CO<sub>2</sub>) emissions.

The United Nations Conference on Sustainable Development, also known as Earth Summit 2012 or Rio+20, is regarded as one of the most crucial events in United Nations history and has been referred to by the Secretary General of the United Nations (2011), Ban Ki-moon, as “the most important global meeting on sustainable development in our time” (The Future We Want, p 2).

## **Introduction**

In June 2010, the Canadian Environmental Network (2008) put out a call to 600 partner organizations from across Canada (About Us, para. 2), inviting them to consider coordinating the participation of civil society organizations and individuals for Earth Summit 2012.

The One Earth Initiative Society, a research and advocacy group based in Vancouver, British Columbia, responded and took on a leadership role in coordinating nationwide activities for the conference. They began planning a two-year process to engage Canadians in the conference and to observe the government negotiations. One Earth facilitated a series of six strategic planning sessions in Vancouver and Ottawa to establish a framework for operations, objectives, and timelines.

## **The Canadian Earth Summit Coalition**

In September 2010, One Earth initiated the formation of the Canadian Earth Summit Coalition (the Coalition), an informal group of academic, research, advocacy, grassroots, and nongovernmental organizations from social, environmental, and economic backgrounds. The Coalition is a nonpartisan, self-organized network that today includes over 30 Canadian organizations (We Canada, 2012, The Coalition, para. 1). The Coalition’s work is primarily focused on developing policy for the conference and on advocating for its policies with the Government of Canada.

## **We Canada**

Shortly after, in collaboration with Pearly&White, a boutique branding and marketing agency, One Earth co-founded We Canada, a youth-led citizen movement for Canadian leadership in sustainable development at the Earth Summit 2012 and beyond. We Canada's goals were to engage citizens in policy development and to serve as an enabling platform for ideas and action. We Canada worked to empower Canadians by demystifying the United Nations process related to the conference.

## **Funding**

All We Canada activities were funded by donations from individuals and businesses that have demonstrated commitment to corporate social responsibility, such as Broadway Architects, a green architecture firm that contributed towards website funding, and the Sound Research Institute that contributed in-kind with complimentary video recording equipment and documentary film editing. The majority of funds raised were obtained through public events, such as the launch party held in Vancouver in November 2010 and the cross-country tour.

We Canada's most significant project, the cross-country tour Dialogues and Action for Earth Summit 2012, was funded by donations from the event attendees, universities, student unions, and the guest speakers involved. Some notable contributors were VIA Rail, Sustainable Concordia, the Political Science Club at King's University College (University of Western Ontario), University of Toronto Scarborough Campus, Dr. David Suzuki, Severn Cullis-Suzuki, and Climate Reality Canada vice-president Desirée McGraw.

## **United Nations Conference on Sustainable Development (Earth Summit 2012, Rio+20)**

Earth Summit 2012 commemorated the 20th anniversary of the 1992 Rio Earth Summit. It was held in June 2012 in Rio de Janeiro, Brazil. More than 130 heads of state, including French president Francois Hollande and Russian president Vladimir Putin, and other high level officials such as United States Secretary of State Hilary Clinton, met in Rio de Janeiro to determine how our world will move towards a sustainable future in the next ten years.



Figure 1: United Nations Conference on Sustainable Development logo

The themes of the conference were “green economy in the context of sustainable development and poverty eradication” and “institutional framework for sustainable development” (UN, 2010, Themes and Objectives, paras. 1 - 2). The conference had three main objectives:

1. Securing renewed political commitment to sustainable development;
2. Assessing the progress and implementation gaps in meeting already-agreed commitments;
3. Addressing new and emerging challenges.

### **Dialogues and Action for Earth Summit 2012**

In February 2012, We Canada's young sustainability advocates embarked on a two-month, cross-country tour, Dialogues and Action for Earth Summit 2012, to talk to young Canadians about the conference and the opportunity for positive change it presented.

The tour goal was to empower citizens by informing them of the past five United Nations Earth Summits and Canada's role in them, to engage the attendees in dialogues around sustainability, and to provide a platform for action. The events were mostly held at schools and universities. They each included a presentation, a consultation guided by pre-set questions, and an action piece that involved sending a letter to the Minister of Environment Peter Kent or to their local Member of Parliament.

The tour headline speakers were Aleksandra Nasteska, who spoke in universities starting from Montreal until the last tour stop in Vancouver; Victoria Wee, who spoke in high schools and elementary schools and traveled with the troupe for the whole tour; and Marie-Pierre Daigle, who spoke in universities starting from Corner Brook until the tour mid-point in Ottawa. The tour also featured prominent guest speakers such as David Suzuki, who was a keynote speaker in Toronto at the University of Toronto Scarborough campus; Climate Reality Canada vice-president Désirée McGraw, who was a keynote speaker in Montréal at Concordia University; and ten year-old tar sands activist and singer Ta’Kaiya Blaney, who was a guest speaker in several elementary schools in the Greater Toronto Area.

The number of universities visited was 23, and the number of schools was 30. The total number of tour attendees was 7,837, of which 75 per cent were youth between the ages of 10 and 25. A total of 1,129 letters were sent to political leaders, demanding that the Government of Canada make sustainable development a priority on the federal agenda or not show up at the conference. In each city, the touring troupe members were hosted by Canadian families, who contributed accommodations, meals, and local transport assistance. A full list of stops, university events, dates, and keynote speakers can be found in Appendix 1.

The results of the tour were presented in We Canada’s report *The Future Canadians Want* during the conference in Rio de Janeiro in June 2012, at We Canada’s event *A Journey for Canadian Leadership at Rio+20*, where Severn Cullis-Suzuki was the keynote speaker.

## **Methodology**

The series of events on the cross-country tour were designed to include the most diverse representation of views across Canada possible. The touring troupe visited 16 cities and towns. English events were held in Corner Brook in Newfoundland and Labrador; Halifax in Nova Scotia; Montreal in Québec; Ottawa, Kingston, London, Waterloo/Kitchener and Toronto in Ontario; Winnipeg in Manitoba; Saskatoon in Saskatchewan; Edmonton in Alberta; Victoria and Vancouver in British Columbia; and Whitehorse in the Yukon. French events were held in Moncton in New Brunswick, Québec City in Québec, and Ottawa in Ontario. The schools chosen were a mix of elementary, middle and high schools, both public and private, including schools in First Nations communities. The university events were open to the public, though the majority of audience members were students.

The consultations held at the events were developed in collaboration with Shauna Sylvester, a facilitator and policy analyst at Carbon Talks, a non-profit organization from Vancouver that facilitates public dialogues on carbon tax policy. The discussion guides were based on questions related to the topics and objectives of the conference, with a goal of finding out Canadian citizens' priorities for the Earth Summit 2012.

In universities there were two questions. For the first question, the group of attendees was split in three subgroups for time management purposes. The two questions for the university dialogues were:

1. What are the Canadian values, interests, and assets that should shape Canada's international negotiations on sustainable development at the Earth Summit 2012?
2. What are some concrete suggestions for ways we can have a flourishing environment, stable economy and strong social fabric?

In elementary, middle and high schools, the questions were adjusted according to each age group. A youth-specific question was added to inspire youth to think about their involvement in global action. The following three questions guided the discussions in the schools:

1. Why is it important for youth to participate in this conference?
2. What Canadian values should shape Canada's international negotiations on sustainable development at the Earth Summit 2012?
3. What are ways we can have a flourishing environment, stable economy and strong social fabric?

One of the tools We Canada's team used to analyze and group the responses in themes and objectives was color-coding the responses during the consultation itself; the participants wrote their answers on colored sticky notes that corresponded to a particular question. For example, for the university subgroup question "What are the Canadian values that should shape Canada's international negotiations on sustainable development at the Earth Summit 2012?" the participants wrote their answers on blue sticky notes in every university event held across the country.



Figure 2: We Canada volunteers at University of Winnipeg grouping the sticky notes by color

Another tool the policy team used to group the consultation results in themes was word visualizations. The team members consolidated the responses for every question, divided by region and age group, and inserted them into a program called Wordle. The program was used by the team to rearrange the words by the number of highest instances of a particular word, producing an image about the most popular topic. For example, the image below is a visual representation of the responses to the question “What are the Canadian values, interests, and assets that should shape Canada’s international negotiations on sustainable development at the Earth Summit 2012?” These responses were collected from the public event held in Montreal, Quebec.



Figure 3: Word visualization of emerging themes extracted from consultation responses in Montreal, Quebec – values that need to shape negotiations

## Analysis of Overarching Themes

Ten overarching themes were extracted from the qualitative data gathered at the 51 consultations conducted across Canada. They are listed by highest occurrence of the topic during the consultations.

### 1. Elimination of fossil fuel subsidies and stopping the oil sands



Figure 4: Student in Edmonton participating in the consultation

The first theme revolved around the elimination of fossil fuel subsidies and eradication of the oil sands and predominantly indicated the identification of “taxing carbon” as an area of interest. Although it could overlap in the areas of renewable energy and preservation of natural resources, this theme also included a call to end

“fracking” – defined by the United States Environmental Protection Agency as “a well stimulation process used to maximize the extraction of underground resources; including oil, natural gas, geothermal energy and even water” (2012, Hydraulic Fracturing Background Information, para. 1)—an end to the oil sands, and an end to dependence on oil. A participant in Edmonton, Alberta, prioritized the oil sands as an area of concern, and said that “to protect our planet, Canada needs to implement clear environmental regulations, especially on the oil sands exploitation” (participant, We Canada tour, March 14, 2012).

### 2. Renewable energy and reduction of energy consumption

The energy theme spoke to a major interest across Canada regarding the dramatic increase of renewable energy use, research, and investment, as well as to the introduction of local, regional, and national programs to incentivize the reduction of energy consumption per capita. A student from Corner Brook, Newfoundland and Labrador, said that “by investing in renewable resources and alternative energy, we can preserve our environment and protect that which makes this country beautiful” (high school student, We Canada tour, January 30, 2012).



### 3. Green communities and eco-conservation

“Green communities and eco-conservation” captured a range of interests from the conservation of natural resources and wildlife protection, to the greening of communities through eco-infrastructure, local farming, community gardens, creation of green space, and better investment in public transit and other transportation alternatives. One participant in Montreal, Québec, said that “conservation of the environment is key for Canada’s protection of its own biodiversity” (participant, We Canada tour, February 15, 2012).

### 4. Water usage and protection of water sources

The fourth item of concern among citizens involved how water is used and how water sources are protected. With water identified as both one of the country’s greatest assets and greatest values, many of those who raised water as a priority would like to see Canada reduce its internal exploitation of water sources through accountability programmes and eliminate the use of bottled water. A student in Winnipeg, Manitoba, said that “we need our water supply to sustain health and life expectancy” (middle school student, We Canada tour, March 6, 2012).

### 5. Youth participation and issues

In 1981, the United Nations defined “youth” as persons between fifteen and twenty-four years of age, and “children” as persons under the age of fourteen (What does the UN mean by "youth," para. 1). Today, the United Nations estimates that youth comprise 18% of the world’s population, and children (aged five to fourteen years) comprise 19.8% (2012, How many youth are there in the world today?, para. 1). With such a staggering number of humans tending toward the lower range of the age spectrum, it is hardly a surprise that many Canadian consultations highlighted young people as important factors in sustainable development issues. Foremost, Canadians would like to see a greater role played by youth in shaping a better tomorrow through political advocacy and inclusion in political processes. An elementary school student from London, Ontario, said that “if people can see that children recognize the problem, they will have stronger motivation to change themselves” (elementary school student 2012, We Canada tour, February 28, 2012). Canadians would also like to see communities and governments take an interest in providing a sustainable future for future generations.

## 6. Policy recommendations

During consultations, participants often submitted policy recommendations for policy-makers at all levels. Proposals included concrete recommendations for political action or change, the adoption of new and old policies, and the inclusion of important political actors, particularly the diverse groups that represented citizens in political discussion and policy change. Much of the focus in these recommendations was on subsidising renewable energy sources, making trade more fair, developing and adopting better global standards than Gross Domestic Product (GDP) for measuring collective human well-being beyond economic progress, and returning to the Kyoto Protocol in the wake of the Canadian announcement in 2011 that it intends to withdraw from the international protocol (CBC News, 2011, Canada Pulls Out of Kyoto Protocol, para. 1), which would make it the first country to do so. One participant in Vancouver suggested that we can have a flourishing environment, a stable economy, and a strong social fabric “by carbon taxing and investing funds to make sustainable energy more affordable” (participant, Vancouver, British Columbia, March 27, 2012).

## 7. Canadian leadership

Citizens also called on Canada to set an example for the world and to return to its role as a leader in the areas of environmental protection and peacekeeping, suggesting that Canada has become neutral or obstructionist in its current approach. Many drew attention to Canadian assets that should be protected and valued, including vast natural resources, varied topography and a diverse population. A student from Kingston, Ontario, suggested that “we are affluent and rich. We should remember our privilege when negotiating, so that other populations aren’t left behind” (elementary school student, Kingston, February 21, 2012).

## 8. Cultural shift as an important agent of sustainable change

The eighth overarching theme identified by Canadians focused on cultural shift as an important agent of sustainable change. Predominantly, participants recognized the important roles that major groups such as indigenous peoples, children and youth, businesses, nongovernmental organizations, academic institutions, and the general population play in influencing sustainable change. Methods for achieving cultural shift included individual practices in the home such as recycling, and society-level initiatives such as investment in green business, research towards greener technologies; mass paradigm shifts in communities such as prioritizing local, equitable, fair trade goods and services; and electing, re-electing, or forming governments that pursue long-term visions for sustainable commitments. A student in Victoria, British Columbia proposed

that “we need a new economic system that does not run off the idea that more is better” (university student, We Canada tour, March 19, 2012).

## 9. Education

Education on environmental issues figured as a significant value and interest across those who participated. Recommendations for strengthening education under the banner of sustainable development included a greater investment in public education locally and globally, education on sustainable development in the school system, rethinking the school system itself to be sustainable, and general public education for sustainable development through campaigning and raising awareness. For example, one high school student from Waterloo/Kitchener, Ontario, was insightful in suggesting that “our education should promote innovation and new ideas to solve environmental and political issues” (high school student, We Canada tour, February 23, 2012).

## 10. Consultation and democracy: citizen participation in decision making

The final theme centered on consultation and democracy in Canada. Canadians called for greater transparency, consistent government consultation with diverse groups, and increased encouragement of citizen participation in decision-making. For example, a university student in Ottawa suggested that “solving environmental issues is both a contribution from individuals and government” (university student, Ottawa, February 14, 2012).



Figure 5: Participants answer questions at the consultation at the University of Ottawa

## Regional Priorities

The overarching themes were prioritized differently by the students in the different regions. Below are some of the most recurring themes per region (See Table 1). Some themes that were not the top themes as described above, such as humanitarian issues, still occurred as priority in some regions.

The humanitarian issues theme was mainly focused on investment in sustainable development and improvements in healthcare, gender inequality, conflict, the economic downturn, and global poverty.

Recurring Themes Per Region	
<b>East Coast</b>	<ul style="list-style-type: none"> <li>• Culture shift as an important agent for sustainable change</li> <li>• Canadian leadership – keeping promises and binding agreements</li> </ul>
<b>Central Canada</b>	<ul style="list-style-type: none"> <li>• Green communities and eco-conservation</li> <li>• Culture shift as an important agent for sustainable change</li> </ul>
<b>The Prairies</b>	<ul style="list-style-type: none"> <li>• Culture shift as an important agent for sustainable change</li> <li>• Humanitarian issues</li> </ul>
<b>Northern Canada</b>	<ul style="list-style-type: none"> <li>• Renewable energy</li> <li>• Reducing energy consumption</li> </ul>
<b>West Coast</b>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Green communities and eco-conservation</li> </ul>

Table 1: Recurring themes per region from the We Canada cross-country tour

### Proposed Solutions

Many engaging and inspired solutions were recommended by citizens for adoption in national policy in order for Canada to achieve balance between a vigorous economy, a strong social fabric, and a flourishing environment.

The Maritime provinces were notably concerned with the unevenly distributed economy of Canada which relies heavily on the regions of Central Canada and Alberta, which are rich in natural resources, tar sands, and population. Students in Moncton, New Brunswick, suggested the adoption of a national renewable energy programme, in which provinces and territories advance research and investments in specific renewable energies that capitalize on their geographical advantages. An example given was the province of British Columbia, with its coastal topography, concentrating its efforts on advancing hydroelectric, wave, and tidal power through research, international collaboration, and regional investment and subsidies. Areas with other natural advantages would develop their own regional renewable energy focuses, such as the large geothermal energy potential in the Canadian North resulting in the simultaneous

advancement of renewable energy research and technologies for sharing best practices on a national and international scale, and the economic boost to areas currently dependent on other locations as energy sources.

On a frequent basis, the lack of a solid and consistent sustainable development foundation in public education was highlighted, particularly by schools consulted across the country. The heavily underlined solution was to integrate environmental education in all school curricula from kindergarten to grade 12. Other prominent educational recommendations were to emphasize experiential education through scholarships and subsidies, to introduce more children's books on environmental issues, to eliminate plastic bottles, to install water-bottle filling stations in schools, and to introduce compost, recycling, and waste-disposal workshops in classrooms.

Recommendations for Canada to recommit to reducing its greenhouse gas emissions, to return to its Kyoto Protocol agreements, and to participate in the elimination of the international and future generations' crisis of global climate change rose in all provinces and territories. A participant in Montreal, Québec, observed that "there are no real borders on this planet – our interest is in really acting like global citizens and behaving in the best interests of all countries and people over time and across generations" (participant, We Canada tour, February 15, 2012).

## **Conclusion**

We Canada and the Canadian Earth Summit Coalition were the largest organized initiatives in Canada for citizen participation in the Earth Summit 2012. They connected people and organizations across the country in a vision for sustainable development and created opportunities for influencing political actors. The attempts of We Canada and the Canadian Earth Summit Coalition to change the Government of Canada's position at the conference went noticed by Canadian media such as CBC, Radio Canada, CTV, Calgary Herald, Ottawa Citizen, Montreal Gazette, Globe and Mail, Winnipeg Free Press, and Vancouver Sun. One of We Canada's attempts to truly represent Canadian voices during the conference went noticed by the global community. It was an artistic display at the main entrance of the conference premises. Namely, after We Canada's report *The Future Canadians Want* was completed, in collaboration with the UN, We Canada displayed all the sticky notes collected during the cross-country tour in the shape of a tree. The sticky notes were intended to be a physical representation of Canadian voices at Earth Summit 2012. Conference participants who passed by the wall were invited to pin their own visions of the future they want to build during the conference negotiations. The wall attracted the attention

of many patrons and quickly grew into one of the conference's greatest attractions as people pinned their visions to the tree (See Figure 6).



Figure 6: We Canada sticky-note “tree” at the United Nations Earth Summit 2012 in Rio – the voices of Canadians

However, the Canadian government's position at the negotiations didn't reflect any of the proposed policy recommendations or citizen priorities as recorded during the We Canada consultations. We Canada team members made it a priority to meet with the Canadian delegation at the conference and to discuss the government's point of view. The delegation chose not to meet with We Canada. Some provincial delegations such as Québec, Alberta, and Manitoba met with the We Canada team and took great interest in the report *The Future Canadians Want* that was presented to them during the meetings.

Through observation and reflection with respect to We Canada's voice at Earth Summit 2012, the critical conclusion that emerged was that it is through provincial governments that We Canada and the Coalition can hope to effectively pursue the consideration of Canadians' priorities and objectives for sustainable development as captured during the cross-country tour *Dialogues and Action for Earth Summit 2012* ([www.wecanada.org](http://www.wecanada.org)).

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*\*Writer: Aleksandra Nasteska is a We Canada co-founder. She studied at University Cyril and Methodius in Macedonia and Vancouver Film School in Canada. Her career in communications began as a correspondent for youth-culture television shows on the national network in Macedonia. She is the founder of Vancouver Heartbeat, a multimedia project profiling environmental and social justice leaders; media coordinator for the International Conference on the Degrowth in the Americas; and youth steering committee member for the United Nations Tunza International Youth and Children Conference 2011.*

*\*Writer: Victoria Wee is We Canada's Youth Engagement Director and the lead organizer of We Canada's 16-city cross-country tour. She is active in the Jane Goodall Youth Council and the Canadian Environmental Network's Youth Advisory Board. Victoria coordinated an international youth declaration to the Arctic Council in 2011. Victoria was a facilitator at the United Nations Tunza Children and Youth Conference in Bandung, Indonesia, and she is We Canada's focal point to the Road to Rio+20 Coalition. Victoria is completing her undergraduate degree at Stanford University.*

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**Appendix 1:** Cities, locations, dates and speakers who participated in the We Canada tour. Table 2 shows key information about the We Canada Cross-Country Tour.

City	University/ Organization	School	Date 2012	University Guest Speakers
<b>Montreal, Québec</b>	<ul style="list-style-type: none"> <li>• Jeanne Sauvé Foundation</li> <li>• Canada World Youth</li> </ul>		January 28	Paul Omonge
<b>Corner Brook, Newfoundland and Labrador</b>	<ul style="list-style-type: none"> <li>• Memorial University, Greenfell Campus</li> </ul>	<ul style="list-style-type: none"> <li>• G.C. Rowe Junior High Presentation Junior High</li> <li>• Corner Brook Regional High</li> <li>• J.J. Curling Elementary</li> </ul>	January 30 - 31	
<b>Halifax, Nova Scotia</b>	<ul style="list-style-type: none"> <li>• University of King's College</li> <li>• Dalhousie</li> </ul>	<ul style="list-style-type: none"> <li>• Halifax Central Junior High School</li> </ul>	February 2 - 3	
<b>Moncton, New Brunswick</b>	<ul style="list-style-type: none"> <li>• Université de Moncton</li> </ul>	<ul style="list-style-type: none"> <li>• Moncton High School</li> </ul>	February 6 - 7	
<b>Québec City, Québec</b>	<ul style="list-style-type: none"> <li>• Université Laval</li> </ul>		February 9	Francine Richard
<b>Montréal, Québec</b>	<ul style="list-style-type: none"> <li>• Sustainable Concordia</li> <li>• Student Union Concordia</li> <li>• Arts and Science Federation of Associations</li> <li>• McGill School of Environment</li> </ul>	<ul style="list-style-type: none"> <li>• Vincent Massey Collegiate</li> </ul>	February 10 - 15	Désirée McGraw
<b>Ottawa, Ontario</b>	<ul style="list-style-type: none"> <li>• Carleton University</li> <li>• Ottawa University</li> </ul>	<ul style="list-style-type: none"> <li>• Collège Saint-Joseph de Hull</li> <li>• Kanata Montessori School</li> <li>• Alta Vista Public School</li> <li>• St-Laurent Academy</li> </ul>	February 14 - 16	<ul style="list-style-type: none"> <li>• Dr. Philippe Crab</li> <li>• Geoff Green</li> </ul>



City	University/ Organization	School	Date 2012	University Guest Speakers
<b>Kingston, Ontario</b>	<ul style="list-style-type: none"> <li>• Queens University</li> </ul>	<ul style="list-style-type: none"> <li>• Bayridge Secondary School</li> <li>• Quinte Mohawk School</li> <li>• Kingston Friendship Centre</li> <li>• Kingston Native High School</li> </ul>	February 17 - 21	
<b>London, Ontario</b>	<ul style="list-style-type: none"> <li>• Western University</li> <li>• King's University College</li> <li>• Political Science Club</li> </ul>	<ul style="list-style-type: none"> <li>• Centennial Private School</li> <li>• John A Macdonald Secondary School</li> <li>• St. Nicholas Private School</li> <li>• 6 Nations School</li> </ul>	February 23 - 27	<ul style="list-style-type: none"> <li>• Dr. Radoslav Dimitrov</li> </ul>
<b>Waterloo, Ontario</b>	<ul style="list-style-type: none"> <li>• University of Waterloo</li> </ul>	<ul style="list-style-type: none"> <li>• Jack Chambers School</li> <li>• Clarke Road Secondary School</li> <li>• Chippewas Antler River Elementary</li> </ul>	February 28	<ul style="list-style-type: none"> <li>• Dr. Amelia Clarke</li> </ul>
<b>Toronto, Ontario</b>	<ul style="list-style-type: none"> <li>• University of Toronto, St. George Campus</li> <li>• Scarborough Campus</li> </ul>	<ul style="list-style-type: none"> <li>• Cerderbrae Collegiate Institute</li> <li>• Our Lady of Lourdes Catholic School</li> </ul>	March 1 - 5	<ul style="list-style-type: none"> <li>• Raili Lakanen</li> <li>• Dr. David Suzuki</li> </ul>
<b>Winnipeg, Manitoba</b>	<ul style="list-style-type: none"> <li>• University of Winnipeg</li> </ul>	<ul style="list-style-type: none"> <li>• Lincoln Middle School</li> <li>• Maples Collegiate</li> </ul>	March 7 - 8	<ul style="list-style-type: none"> <li>• Elisabeth Guibault-Cox</li> </ul>
<b>Saskatoon, Saskatchewan</b>	<ul style="list-style-type: none"> <li>• Saskatchewan University</li> <li>• University Learning Centre</li> </ul>		March 9	

<b>City</b>	<b>University/ Organization</b>	<b>School</b>	<b>Date 2012</b>	<b>University Guest Speakers</b>
<b>Edmonton, Alberta</b>	<ul style="list-style-type: none"> <li>• University of Alberta Office of Sustainability</li> <li>• Grant McEwan Concordia</li> <li>• University College of Alberta</li> <li>• NAIT</li> </ul>	<ul style="list-style-type: none"> <li>• Loren Akins Junior High School</li> <li>• École St. Stanislaus School</li> </ul>	March 13 - 16	<ul style="list-style-type: none"> <li>• Dr. Colin Soskolne</li> <li>• Elisabeth Guibault-Cox</li> </ul>
<b>Victoria, British Columbia</b>	<ul style="list-style-type: none"> <li>• University of Victoria</li> </ul>	<ul style="list-style-type: none"> <li>• Spectrum High School</li> </ul>	March 19, March 30	
<b>Whitehorse, Yukon</b>	<ul style="list-style-type: none"> <li>• Yukon College</li> </ul>	<ul style="list-style-type: none"> <li>• École FH Collins Secondary</li> <li>• Porter Creek Secondary School</li> </ul>	March 21	<ul style="list-style-type: none"> <li>• Dr. John Streicker</li> </ul>
<b>Vancouver, British Columbia</b>	<ul style="list-style-type: none"> <li>• Simon Fraser University</li> <li>• Carbon Talks</li> <li>• One Earth</li> </ul>		March 27	<ul style="list-style-type: none"> <li>• Severn Cullis-Suzuki</li> <li>• Emmanuel Prinet</li> <li>• Dr. Cathryn Harrison</li> <li>• Sasha Caldera</li> </ul>

## **Appendix 2: Acknowledgements**

Many people, organizations, and businesses contributed to make this cross-country tour possible. We would like to thank them for the incredible support and involvement in We Canada.

We thank all the universities, high schools, elementary schools and other organisations that hosted the cross-country tour events and were listed in Appendix 1.

We also thank the following people and organizations.

### **Main Speakers**

Aleksandra Nasteska, Victoria Wee, Marie-Pierre Daigle

### **Facilitators**

Kristy Franks, Alexandra Lucchesi

### **Guest Speakers**

Amber Mac, We Canada Champion, broadcast journalist, and author

Dr. Amelia Clarke, assistant professor, University of Waterloo

Dr. Colin Soskolne, professor, University of Alberta

Dr. David Suzuki, Co-founder of the David Suzuki Foundation

Désirée McGraw, We Canada Champion, and Climate Reality Canada vice-president

Elisabeth Guilbaud-Cox, head of communications at the United Nations Environment Programme Regional Office of North America

Emmanuel Prinnet, We Canada co-founder, and Policy Director at the One Earth Initiative Society

Francine Richard, Director, Sustainable Development Strategies, Audits and Studies, Office of the Auditor General of Canada

Geoff Green, We Canada Champion, and founder of Students on Ice

Dr. John Streicker, science advisor for the Northern Climate Exchange

Dr. Kathryn Harrison, professor, University of British Columbia

Paul Omonge, Sauvé Scholar at Jeanne Sauvé Foundation

Dr. Philippe Crabbé, professor emeritus, University of Ottawa

His Excellency Piragibe dos Santos Tarragô, Ambassador of Brazil to Canada

Dr. Radoslav Dimitrov, professor, University of Western Ontario

Raili Lakanen, We Canada policy development director

Sasha Caldera, Fair Trade Vancouver co-founder

Severn Cullis-Suzuki, We Canada Champion, and internationally acclaimed activist and speaker

Ta’Kaiya Blaney, We Canada Champion, activist, and singer-songwriter

### **Host Families**

Adam Malloy and family, Waterloo

Celeste Côté, Ottawa

Elizabeth Zarpa, Halifax

Heidi Machel, London

Iris Barrington-Leigh, Edmonton

Isaac Armstrong and family, Moncton

Jim and Judy Franks, Montreal

Laura Franks and Michael Carabine, Montreal

Maureen Matthews, Winnipeg

Peter Bretscher and Calliopi Havele, Saskatoon

Steve Roddick, Whitehorse

Tim and Kimberley Loyst, Kingston

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# Dwelling together: A visual approach to an ecovillage's sense of place

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## ABSTRACT

This paper and photographic essay present an empirical characterization and theoretical treatment of an ecovillage. Informed by the principles of sensory ethnography, my representation aims to describe and interpret an ecovillage as a place defined by practice. The author approaches this characterization from a dwelling perspective, emphasizing the performances of ecovillagers in a series of photographic and textual vignettes. The author concludes that an ecovillage may be considered, in part, as a place where familiar tasks are undertaken in unfamiliar ways in a vast and varied physical and social landscape.

## Introduction



**The Old Barn**

The visual and textual data presented here are the result of an 18-month involvement with a 30-member sustainable agricultural community in Dufferin County, Ontario. The community (whose name, as well as those of its inhabitants, have here been anonymized in the interests of privacy) is a self-described ecovillage—“a sustainable human settlement which is in harmony with all aspects of life, including the cultural, ecological and spiritual dimensions” (Gaia Trust)—founded in response to a perceived loss of genuine community, the increased urbanization of rural areas, and the growing impoverishment of farmland; Its diverse membership is comprised of educators, professionals, students, volunteers and farmers living in a 15,000 square-foot co-operative residence (here named ‘Big Building’) and a turn-of-the-century farmhouse. The community purports to offer a solution to the frustrations faced by environmentally conscious urbanites: in contrast to the tarpaper shack and haphazard “free love” stereotypes associated with communes of the 1960s (for a comprehensive overview of the commune movement see Miller, 1999), the ecovillage under study is highly organized and surprisingly modern. The farm’s main residence set a zoning precedent with a green design that prioritizes personal space while preserving communal eating and recreation areas, and the consensus leadership model that helped administer the

group's farm purchase now ensures a level of social and financial accountability among community members. The way of life the community supports aims to blend traditional family values with modern ecological practices, and the result is what one member describes as being more like a "condo on a farm" than a contemporary commune.

Ecovillages have been alternately touted as hopeful lived experiments (Kilián, 2009, pp. 365-371) and dismissed as inconsequential, having neither the membership nor the political inroads to affect significant societal change beyond their walls (Fotopoulos, 2000, pp. 287-308). They have been examined as rejections of an oppressive Western worldview and an articulation of human-ecosystem interdependence (Kasper, 2008, pp. 12-24), and as a parallel pastoralist compliment to urban social movements (Conn, 2010, pp. 831-848). Similarly, Lietaert (2010) asserts that ecovillage "cohousing is a constructive step towards degrowth at the family and neighbourhood level" (p. 580), positioning ecovillages as a necessary alternative to unsustainable economic growth fueled by "hyper-individualism" (p. 580) and material culture. And Ergas (2010) draws on her own participant observation and interviews to assess the collective (and often conflicted) identity of an urban ecovillage as a social movement vis-a-vis proximate political structures, concluding that "despite hardship, these actors have found ways to maintain their vision and share it with others" (p. 50). While each of these authors plays an important role in positioning ecovillages, along with their inherent contributions, conflicts and conundrums, in sociopolitical space and time, it is not the author's aim to situate the particular ecovillage under study historically, politically, socially, or environmentally. The study's goal is to situate the ecovillage, in words and images, as a place defined by its attendant rhythms, juxtapositions, and lines.

#### A Non-representational Perspective

In response to Gibson's (1979) ecological approach to perception, Ingold (2008) has argued that "life is lived in a zone in which earthly substances and aerial media are brought together in the constitution of beings which, in their activity, participate in weaving the textures of the land" (p. 1796), and that through this performative weaving places as we know them become incorporated. This perspective, along with its accompanying ideas of movement, can be situated under the umbrella of non-representational theory, which has as its central tenet the proposition that realities are made up of performances and practices (Lorimer, 2005, pp. 83-94). Just as Vanini and Taggart (2012) have argued that an island's sense of place is defined by the way islanders move, here the author proposes that an ecovillage's sense of place can too be defined by the way ecovillagers move, through a space where seasonal and societal forces act and

interact upon an interface of social substrate and soil. These movements are described as being heavily varied, rhythmically diverse in both their physicality and sociality, and are often at the mercy of those fluxes of medium known as weather (Ingold, 2005, pp. 97-104). In doing so, the author uses folk categories pertaining to an ecovillage's specific geography to situate descriptions of embodied phenomena, aiming to move beyond the trivialities of task and technique (which are left out of this analysis in any holistic sense for considerations of space) to examine the shared performative experiences that attempt to define and identify ecovillagers. These specific geographies can be seen as stages for a series of vignettes—sensual descriptions of activities and interactions—accompanied by a collection of black and white photographs.

### **Picking tomatoes: An immersive approach to photo-ethnography**

Ethnographers have written extensively about the need to negotiate identities when working with(in) communities (Crang & Cook, 2007, pp. 42-43; Cassell, 1988). Cassell particularly suggests that, of the numerous identities available to researchers, “the most appropriate one can be stressed” (1988, p. 97). The research presented here was undertaken during the production of my undergraduate photography thesis, completed in 2008, and over the course of those 18 months the author lived in this particular ecovillage in week-long episodes, working half-time on the farm to earn my room and board. The author's interest in the community stemmed from a burgeoning interest in sustainability, rurality, and small-scale agriculture, and as a result of this blended academic and personal approach had many identities from which to choose. Under the umbrella identities of *researcher* and *student* were the rotating identities of volunteer, paying guest, farmhand, photographer, kitchen aide and so on, and this dynamic presence allowed for fieldwork that was highly immersive and experiential: in addition to a handful of semi-structured interviews, in compiling this textual data the author drew largely upon participant observation (Crang & Cook, 2007, pp. 37-59) that includes preparing communal meals, feeding chickens, picking tomatoes, cleaning barns, carting bricks, shoveling snow, and painting floors, to name but a few activities and chores.





**An interior view of a storage room in the barn, seen after the author finished clearing a stack of old bricks from beneath the window.**

Crang and Cook (2007) assert that “to be a ‘participant’ in a culture implies an immersion of the researcher’s self into the everyday rhythms and routines of the community” (original emphasis, p. 37), and as a result of this hands-on engagement. Involving goals and tasks shared by researcher and subject alike, the vignettes presented here also draw significantly on principles of reflexive ethnography (Ellis, 2004, pp. 1-427). Interviews and reflections have been data analyzed following the procedures of post-phenomenological research (Moustakis, 1994, p. 121): horizontalizing the data, clustering units of meaning into common themes, developing descriptions of experiences and practices based on these clusters, and integrating descriptions into meanings, both experiential and theoretical. Photographs taken by the author are presented based on their adherence to, and articulation of, the meanings emerging from interviews and reflections, as well as on their aesthetic merit as determined by the author, a trained professional photojournalist. Additionally, the images presented here are intended not simply, as Sontag (1973) has reduced it, “to illustrate the analysis contained in an article” (p. 22), but to aid in thick description in hopes of conveying a nearer totality of experience (Pink, 2001, pp. 50-76). The accompanying photographs function not just as mnemonic devices for later analysis, but served in-situ as a means of understanding, as “to take a photograph is to participate in another person’s . . . mortality, vulnerability, mutability” (Sontag, 1973, p. 15), and, I would add, sustainability.



Doris working in the chicken coop while the author helps collect eggs.

### **In the Car**

Driving the dusty lanes to the farm in the mid-morning, Doris, my host and a founding member of the ecovillage, describes and explains the events of the past few months. Like the washing line behind the house, the line between news and gossip is pulled taught in such a close-knit community, and the retired teacher's stories cross back and forth with the wind. Gerhardt, a male community member, had fallen for one of the farm's volunteers at the beginning of the season, and his behavior had become increasingly erratic and threatening as he was refused again and again. The hot, dry July was brought to a head with the stabbing of a farmhouse table; when the community confronted Gerhardt about his actions, members were torn between the hard-working, forty-year-old Ontario gypsy and the young, transient volunteer whose placement was nearly up. Many community members sided with Gerhardt, but he was asked to put some distance between himself and the intern.



Community members open the door to the barn in preparation for a morning of milking cow.

Gerhardt is working in the barn's workshop one afternoon, shirtless and hunched over some pieces of farmhouse floorboard that are being stripped and resurfaced. The event is far from our topics of conversation but still he speaks very little, apparently indifferent to me and the few chickens pecking at the sawdust near the door. "Cities weren't made for people, they were made for cars," is his reply when asked if he had lived in the nearby city before moving to the ecovillage. "I never lived in the city." And with that curt dismissal, I slip sheepishly away through the sawdust and the chickens.

### **In the Field**

James is a high school teacher on what he calls "indefinite farming leave." Hunched over a laundry basket with cracked and splayed sides that suggest a previous crop far bigger than the one this drought has brought, he explains the trick to picking tomatoes in a field with more varieties than I knew existed.



**James and Emery, the head farmer, pick tomatoes in one of the community's fields.**

Making our way slowly down the rows of plants, we face each other, offset by a few vines, backs (mine, at least) beginning to ache with the bending. The vines scratch our wrists, releasing the sweet and sour aromas of fruit and soil as we reach deep into the low tangles and carefully stack small ones upon the larger in our baskets. No supermarket, with its waxy, imported produce, would admit that customers could eat tomatoes as non-conforming as the ones being picked. “The small ones actually fetch a higher price at the farmers markets; people love them. The yellow ones are pretty popular too,” James says as he lifts a large beefsteak, its underside blackened and blistered, into a separate pail. “Rotten tomato stew,” he says by way of explanation. The crops have not seen a rain shower in eight weeks, and nothing is wasted.



Alexa and Erik play around a hay bale near one of the community's fields.

The afternoon has been cloudy and warm, and as we reach the end of a row a sudden monsoon is unleashed upon us, dropping the dust in the field and making the leaves dance as if an electric current was running through their roots. It stops as suddenly as it started, a few minutes after it began. "Is that all the rain we're going to get?" James shouts at the sky.

The wind has picked up, and on the way back to the Big Building, Emery is found half-buried in the poly-tarp wall of a greenhouse, trying to re-attach the ripped material to a set of weighted wooden spreaders along the ground. The beginnings of a storm whips it about like a torn sail as we kneel on it together, frantically working nails into rotten wood and trying to keep the greenhouse's seedlings from being strewn about.

### **In the Kitchen**

Henrietta, a visitor from Europe who is staying on the farm with her family, is making Dutch pancakes for tomorrow's work bee, the monthly event that invites in neighbours from the surrounding towns and countryside for the opportunity to get their hands dirty on the farm. This batch is being made with the buttermilk Emery brought down to the Big Building this morning, and they are sticking slightly to the

glass frying pan. As the viscous disks collect pockmarks and congeal, she whisks raw milk in a pot on the stove and spoons it into our coffees.



**A seasonal volunteer plays with Mikey on the floor of the communal kitchen in the Big Building while his mother sweeps.**

Emery walks into the kitchen with more milk from the farmhouse. After asking if he needs help with anything outside, he replies, “I don’t think so,” through teeth as erratically spaced as the young trees in the windbreak up the lane, “I’m going to take a nap and then go see a man about some cheese.”

### **In the Pond**

Kaye, 18, does a front flip off the swimming raft in the late afternoon, after the work bee is over and the volunteers have gone home. She spent the day working with Doris and the children, putting deer guards around the bases of the saplings that will one day serve as a windbreak against the western wind. A whiff of salt and soil is captured before the water engulfs her body. Her coarse black hair—the same as her mother’s—sticks to her back as she climbs alongside her younger siblings into the v-bottomed canoe her older brother made years ago, and she takes Alexa for a paddle around the pond as Erik swims beside them.



Kaye helps store extra building supplies in the rafters of the old barn during a community clean-up day.

### **In the Honey Shed**

Nicolas' centrifuge lives in a dark corner of the maintenance room, between the furnace and a pile of Wellington boots, where he spins the honey from the combs he collects from the hives on the eastern edge of the pond. He has been thinking of leaving the community: his wife's allergies have gotten worse and she is finding it very difficult to live on the farm. At the moment they are in transition, living in the city and coming up to the farm on weekends to tend to the honey. As he loads each frame of honeycomb into the centrifuge he explains the concept of 'bee space', as proposed by Reverend L. L. Langstroth, he says, in 1853. The theory dictates the preferable distance between the frames in a hive to maximize productivity, a gap between a quarter and three-eighths of an inch. Spaces any smaller restrict the bees' access to parts of the comb; spaces any larger are bridged with wax, creating impasses that clog the hive.

There is a pile of Nicolas' belongings in the barn. Digging potatoes with Marianne, a long-standing member, in the afternoon, I ask her about Nicolas and his plans to leave. "He said his things will be gone by October 1<sup>st</sup>," she says. "I think he just can't handle being around so many people all the time."



**A seasonal volunteer sorts blighted potatoes after heavy rains.**

In the kitchen that evening, Henrietta prepares dinner while Magda bottles honey at a low table. Henrietta talks about her brother Rex, a successful news photographer in Europe, and Magda talks about the small gallery in the city where she and Nicolas work—a gallery specializing in objective art. She says I should come visit sometime, saying that they also show some photography, prompting the argument from Henrietta and myself that no photography is objective: the act of framing a picture and releasing the shutter is selective and subjective, privileging a single moment and certain elements within a scene over all others. “And often it’s what’s not in a picture that is important,” surmises Henrietta, using as a hypothetical example a photograph of shadows on the ground from a washing line. The image reminds me of the dark shapes of Nicolas’ things under blankets in the barn, and of Gerhardt’s knife wounds hidden beneath the honey jars on the table.





Steph, one of the community's youngest members, hangs laundry to dry outside the Big Building.



A fence casts shadows across a snow-covered field behind the barn.

## In the Big Building



**Erik does the dishes in his family's suite in the Big Building while his elder brother plays in a neighbouring common area.**

Doris collects me from the bus station on a dark winter evening, and on the way out of town we stop at the drugstore for cigarettes—her one vice, she explains, against the recent stresses of community life. Back at the farm there is minestrone and cornbread in the kitchen, saved from dinner for late arrivers like Doris and myself. I eat at the high counter while she brings me up to date on recent events, the corners of her eyes crinkling behind her school teacher's glasses as she tells me about sneaking the bulbs in before the frost, and about her new fruit tree. She is less optimistic about the roof: a fault in the water sealant has allowed ice to form above the ceiling, and on warmer days the corner of the common room has been weeping. Her chief concern, though, is the educational wellbeing of the community's few children, and she confides in me that the home schooling approach has been lacking lately:

“I'm in favour of home schooling, but as a teacher myself I find that the parents are usually fairly limited. If the whole community were involved it would be much broader: there would be a lot more interaction, as well as a blending of pedagogies. It will probably evolve

if we get more young kids here. I know the Smiths (a visiting family) will want a broad education for Toby (age 3), if they decide to stay and home school, so the possibilities will open up. Right now, the way things are, there are a lot of elements missing from their education. There are some things the parents are not interested in, like the sciences, which is unfortunate because this place is perfect for that. I'd love to take that on, and I've taken them out from time to time to teach them some gardening, but to be honest I just don't have the time. And I feel guilty. Perhaps not *guilty*, but I feel bad for their education."

### **In the Old Farmhouse**



**Steph's father Rob, seen in front of the fire in the old farm house.**

I visit Emery, Steph, and Thom in the farmhouse. The men are playing chess and churning butter simultaneously, the mason jar full of thick yellow cream passing back and forth, shaken by one as the other contemplates the next move. Emery has won seven games in a row, and the butter is nearing completion.

Steph and her husband Kenny have been trying to sell their suite in the Big Building for close to two years, they tell me as we sit in front of the fire. The only full

community members under the age of forty, they bought into the farm with the help of Steph's aunt Marianne, one of the community's founding members, who agreed to cover the \$50,000 required by each new couple to retroactively contribute to the cost of the farmland. The \$120,000 for their suite quickly turned into \$150,000 as the construction process dragged on, and they became aware soon after moving in that community life was not for them. Steph cites the impact of the isolation on her relationships with her friends living off-property as a major factor, as well as the pressure of finding a balance between her job as a social worker in a nearby town and her duties on the farm, "which is also basically a full-time job." The problem they now face is that whoever buys their suite must first be approved by every other member of the community, and the task has been difficult. "I don't understand," Steph says in criticism of the consensus decision making process, "Wouldn't you rather share your space with someone who truly wants to be there, and wants to contribute, rather than with people who are resentful of not being able to leave?" Henrietta and Howie are renting their suite in the meantime, providing Steph and Kenny with an income that is only as stable as the visiting family.

### **On the Pond**



**Thom smokes pot in a CSA storage shed before returning to work.**

Thom, a seasonal volunteer, smokes pot from a makeshift pipe in the back room of the work shed later in afternoon before finishing chopping wood for the fire. Timothy Smith smokes a cigarette outside, and Begbie the dog waits by the door, his head visible through the large hole that functions as a handle in the sliding door. The bench of the back room is covered with old tools that have most likely been forgotten by everyone but the farm's young volunteers, who use the screwdrivers to roll joints and 'pack bowls' in the diffuse light that pours in through the cluttered window overlooking the Community Shared Agriculture (CSA) shed.



**Thom tests the ice on the pond while Begbie jumps for flying ice chips;**

Earlier that day Thom showed me how to test the thickness of ice on a body of water—something I, being from coastal British Columbia, had little experience with. Easing his way towards the center of the pond, hatchet in hand, he proceeded to hack small holes in the ice, testing the depth to the water below as he went while Begbie the dog leaped to catch flying ice chips in his mouth. Back on shore, Kaye's v-bottom canoe sat covered in snow, unused since the summer.



A cow skull sits in the wood shed of the old farm house.

### In the Driveway



Kenny carries suitcases through the parking lot before leaving the community.

Ziv arrives in the late evening, his headlights appearing first as two eyes among the trees on the horizon, the car slowly sniffing its way home between the snow drifts that line the driveway. Alan is moving onto the farm in the next few days, and the bulk of his things fill the back of the car and part of the roof creating the impression of an old-time covered wagon. I help Ziv and Daniel carry the boxes through the snow to the rec room door. Later still, Steph's mom arrives to help her and Kenny pack. The two women are going on a short vacation in California before the couple moves to a small northern town, and at the last minute they convince Kenny to come with them. He agrees, eager for some respite from the icy air of the community, and carries the suitcases out to the car through the last of the snow.

## **Conclusions**

The various practices of dwelling in an ecovillage may be familiar to most. Preparing food, playing with a child, washing dishes; like sawing a plank, these are tasks that are processional in their familiarity (Ingold, 2011, pp. 51-62). Other practices—like sorting through blighted potatoes, milking a cow, spinning honey, making cheese, or walking the rafters of a barn—may be less familiar, but they are nonetheless integral to the incorporation of an ecovillage as a place. As tasks they are assembled along lines, be they lines of narrative and temporal sequence that through convention dictate the order of activities over the course of a day (Ingold, 2008, pp. 1796-1810), or physical lines such as the driveways and rows that lead us between buildings and barns and between tomatoes in fields. In their multimodal exploration of an island as a place, (Vannini & Taggart, 2012, pp. 1-18) assert that “inhabitants incorporate a place by sheer practical, creative, skillful engagement with its affordances . . . solving going concerns as they present themselves” (p. 3). The same can be said of the inhabitants of an ecovillage, as members make practical uses of the affordances of their environment and creatively solve the problems. In the ecovillage, however, familiar tasks are undertaken in unfamiliar ways, in a vast and varied social landscape.





**Community members work together to clear the parking lot of the Big Building after heavy snowfall.**



**Community members work together to clear the parking lot of the Big Building after heavy snowfall.**



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# Food Sustainability: Visually Speaking

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## ABSTRACT

Food sustainability at Edmonton's regional, city, community and personal level is visually presented within a VCPH 340 Documentary Photography final project. This article reveals how the final project inspired a group of design students to cultivate the concept of, raise awareness about and promote food sustainability activism within and around Edmonton, Alberta, Canada.

## The Project

In the Design Studies Program VCPH 340 Documentary Photography winter course (2012), instructor James Parker introduced a final group project that gave teams a number of thematic topics to select from— including water conservation, recycling, and food sustainability— to produce a set of documentary photos for presenting in the last week of the term. Amanda Swanson, Breanne Kshyk, Loren Webb, Lindsay Drennan, and Wendy Mulder chose food sustainability as the topic for their project. They developed the project throughout the term while multi-tasking other assignments. The purpose for such a project is described by Inwood (2010):

...by better connecting art to the realities of daily living, art can be used effectively as an agent of social change, one that would capture the

public's attention through its creative, innovative approaches to society's problems. By documenting a growing trend in artmaking that related artmaking to environmental concerns, Gablik provided art educators with an entrée to art focused on the environment, as well as an aesthetic framework...(Inwood, 2010, p. 34)

Hence, documentary photography was used as a means for delving into local environmental issues on various levels to promote social activism in food sustainability and an environmentally friendly means of living in our society.

### **The Composition**

The project required the design students to use standard equipment and software such as their cameras (Nikon D90), tripods, computer, and Photoshop to name a few. This team took the project a step further though by using video with iMovie for the project and showcasing interviews about their topic within the video. Furthermore, the video was tactfully arranged based on content. For instance, certain video clips focused on what interviewees had to say whereas imagery, sound and energy were the priorities in other footage.

Having multiple layers of perspectives and representation adds more depth and credibility to a documentary project and also speaks to a more vast audience. The food sustainability project was divided into, researched, photographed and recorded in sections: considering regional, city, community and personal perspectives provided the project with a wholesome outlook, which is a requirement of documentary photography according to Jing & Yun (2007):

One significant feature of documentary photography is its relationship to time and subject matter. Unlike news pictures that stress eventfulness, movement and shock effect, a documentary project takes much longer for the author to study, as well as experience and understanding of the interrelations of social conditions, cultural values, and people's life. In the process, the author develops a close connection with subjects, while trying to convey, through a series of visual narratives, a particular way of understanding social life in time and space. Often a documentary photographer is not merely a traditional artist seeking the means of personal expression, but a social reformer hoping to use visual means for

social research, to communicate social awareness of previously ignored social facts... (Jing & Yun, 2007, p. 42).

Loren emphasized that achieving documentary photography also requires following a strict code of ethics: “The Code of Ethics for documentary photography helps to guide the imagery towards honesty— any images captured are held strictly to the integrity of that true moment, not to the intentions of the photographer or the subject,” (Webb, interview, June 3, 2010).

Members photographed their individual sections. Wendy and Loren completed the regional section together (each chose five photos) while the other group members managed their own assigned sections in which they developed 10 photos each. Wendy was responsible for the video footage, which acted as a bridge between perspectives and sections that anchored the project and helped connect themes. Loren found the quote and facts for the regional section from Alberta Rural Sustainable Alternatives Network (ARSAN), and the remaining members discovered their own facts and quotes within their course journals or via blog researching and interviewing.

To select photos, group members individually chose the ones they felt were strongest, printed their chosen photos in black and white, met at the school to sift through every section’s photos and voted for the ones they felt weaved a story. The project avoided repetition and overlap through this process of elimination. The intentional placement of potato photos in every section and distributing potato giveaways also helped weave a theme throughout the project.

While presenting the video, the group thoughtfully gave classmates a potato, from one of the visited farms, packaged with a potato recipe card to help promote their topic. Group members searched sustainable food recipes and also wrote where to locally find the ingredients.

The project grew by completing a series of steps. Firstly, the group members learnt the meaning of food sustainability to explore the term visually. Secondly, individuals decided what they would photograph and how to visually represent personal, community, city and regional perspectives of food sustainability to show that it is being achieved. Thirdly, the students researched their assigned sections to discuss the topic with experts; then the members conducted their interviews and captured photographs that represented the sections they were assigned. Following this, individuals edited and organized the information and photography that they had gathered. Finally members grouped together at school over approximately a five-hour period and later at Wendy’s house to assemble their video and photography into a short documentary movie through

a voting elimination process that considered relativity, along with compiling giveaways for classmates. These giveaways consisted of potatoes wrapped in scrap fabric that was tied with yarn with recipe cards attached.

### **Inspirational Research**

Blogs were a main source of research and information. A blog that was closely followed was of interviewee, Kevin Kossowan, whose blog has approximately 40 videos. Kevin represented the city section of the project and enforces the ability of an Edmontonian to become part of the local food sustainability movement by sharing with the public his participation and activism in food sustainability. The group felt he epitomized this section because he is actively involved in learning, videoing and informing about food sustainability within Edmonton and teaching the public how food sustainability is achieved with relative ease. Lindsay described Kevin's personal achievements that show how food sustainability is beneficial in various ways: "His seed budget for the year was a \$100 and that feeds his family of four all the veggies they eat for the entire year," (Interview, May 25, 2012).

For the regional section, Wendy had personal connections with some regional farms and so she interviewed farmers, including her boyfriend who is a dairy farmer, and Loren researched the ARSAN's website to develop content for their section. Interviewing the storeowner of Wild Earth Foods, which is near Lindsay's house, via email helped Lindsay to develop content for the community section of the project. This food store supplies sustainable products and stocks a lot of local items. Lindsay also had personal connections to the store because the location is near her residence and she shops there. The personal section's content derived from Breanne's research of an online company that ships local organic food to consumers' doorsteps. She and Wendy also went to the Strathcona farmer's market to experience and research a local sustainable food environment. They learned that market offers more variety than just vegetables such as bagels, salsa, dried mushrooms, lotions and more.

"At the beginning, at least for me, even Loren, I think, we were like what is this topic? It's so broad. What are we researching?... I think we had to know... what's Edmonton's role in food sustainability?" (Wendy, interview, May 25, 2012). Learning this required delving into the food scene; understanding terms was crucial. Grace (2007) describes sustainability as:

the ability to provide for the needs of the world's current population without damaging the ability of future generations to provide for themselves. When a process is sustainable, it can be carried out over and over without negative environmental effects or impossibly high costs to anyone involved.”

As well the project required group members to research within the Edmonton area and consider food miles for the project to meet food sustainability standards. The following is Gold’s (2007) definition of food miles: “...the distance food travels from where it is grown or raised to where it is ultimately purchased by the consumer or end-user,” (Gold, 2007). Therefore, the scope of the project and of the interviewees must have abided by this defined range, and by the definition of sustainability.

### **Documentary Photography and Food Sustainability**

Inwood (2010) suggests environmental art that is educational should achieve a sense of the following: “Whether grounded on scientific or aesthetic footings, they recommend a pedagogy that is community-based, interdisciplinary, experiential, interactive, dialogic, ideologically aware, and built on the values of empathy, sustainability, and respect for the environment,” (Inwood, 2010, 34). This documentary movie practices all of the previously mentioned elements of environmental art that is educational. The movie also visually speaks to how achievable and beneficial food sustainability is within our present society, which is a social awareness tool of documentary photography that is used to voice the need for change. Breanne described her experience with the project: “Working on a long term documentary photography project was interesting because it really allows you to dig into the subject and see it from multiple points of view. Through this I learned more about food sustainability than I ever thought I would!”

Food sustainability provides a solution for how we eat and how and what we eat is impacting society on a global level: “Issues of personal health and global hunger, the instability of oil-dependent economies, growing agricultural trade surpluses, genetic engineering, the loss of regional crop varieties, the ethical treatment of animals, and the impact of farms on our environment are all part of a daily dynamic we participate in every time we eat,” (Houston, 2007, 2). Social awareness of these issues can be raised via documentary photography.

Amanda explained that the movie delivers a message: “Lots of people were like well they say its too hard to do sustainability, or I’m in the city— it’s impossible, or it’s too expensive and we punched holes in every single one of those... Anyone can do it, you just have to be willing to put the effort into it,” (interview, May 25, 2012). This documentary photographic movie speaks to and inspires others to become more food sustainable.

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*Photographers: Lindsay Drennan, Breanne Kshyk, Wendy Mulder, Amanda Swanson, Loren Webb—are Design Studies students who worked collaboratively to develop the ethnography segment of this article.*

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# Getting Back to the Garden: Reflections on gendered behaviours in home gardening

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## ABSTRACT

There is growing interest amongst scholars in people's gardening behaviours related to food production. This development coincides with society's increased interest in consuming and producing food in sustainable ways. Local food movements, which include urban agriculture and home gardening, have increased in popularity in several countries, especially during the last decade. Academics from a variety of disciplines have been starting to ask questions: Why are people gardening? How is gardening associated with one's identity? What motivates people to adopt environmental gardening practices? Some researchers suggest that gardening research could benefit from gender analysis. This paper examines some of the literature in this growing field of inquiry and finds current gardening research often lacks critical gender analysis, thus failing to problematize gardening behaviours and attitudes. It maintains that this development is curious in light of compelling evidence that shows differences in the gardening behaviours of men and women. It proposes that along with Bhatti's and Church's theory of gardening spaces as mirrors for changing gender relations, Allen's and Sachs's feminist theoretical approach to explore the sociocultural domain of women's relationship to food could be used to conduct gendered gardening research related to food. This discussion concludes that gender analysis is critical to exploring gardening as a research topic and that understanding women's role in gardening for food production

will be especially critical in future research as climate change impacts necessitate different food production and consumption behaviours.

## **Introduction**

Societal interest in gardening and urban agriculture appears to be increasing (see Figure 1). Media reports emerge daily about new initiatives in cities around the world that encourage home and community gardening as well as urban farms and green rooftops. Food gardening especially gained attention in the U.S. media following First Lady Michelle Obama's iconic planting of an organic vegetable garden at the Whitehouse in 2009, the first of its kind since First Lady Eleanor Roosevelt planted a Victory Garden on the front lawn of the Whitehouse in 1943 as part of her effort to encourage Americans to support the war effort by growing their own food (Burros, 2009). Americans' interest in home gardening was already keen by 2009 after the economic downturn of 2007 and 2008 had impacted the U.S., leaving many people without jobs and with reduced income. This rise in public interest is further supported in statistics. According to garden market research conducted by the National Gardening Association, gardening for food production in the U.S. is increasing. It showed in 2009, 43 million American households, or 37 per cent of the households, planned to grow vegetables, fruit, berries and herbs, up 19 per cent from 31 million American households in 2008 (National Gardening Association, 2009, pp. 6-7). The research demographics also showed that most U.S. food gardeners are women (54 per cent) who are 45 years of age and older, married with no children at home, educated at a post-secondary institution (43 per cent), and living in households that earn an annual income of \$50,000 U.S. and over (38 per cent) (p. 8).

Figure 1: Google search trends in the U.S. for vegetable gardening

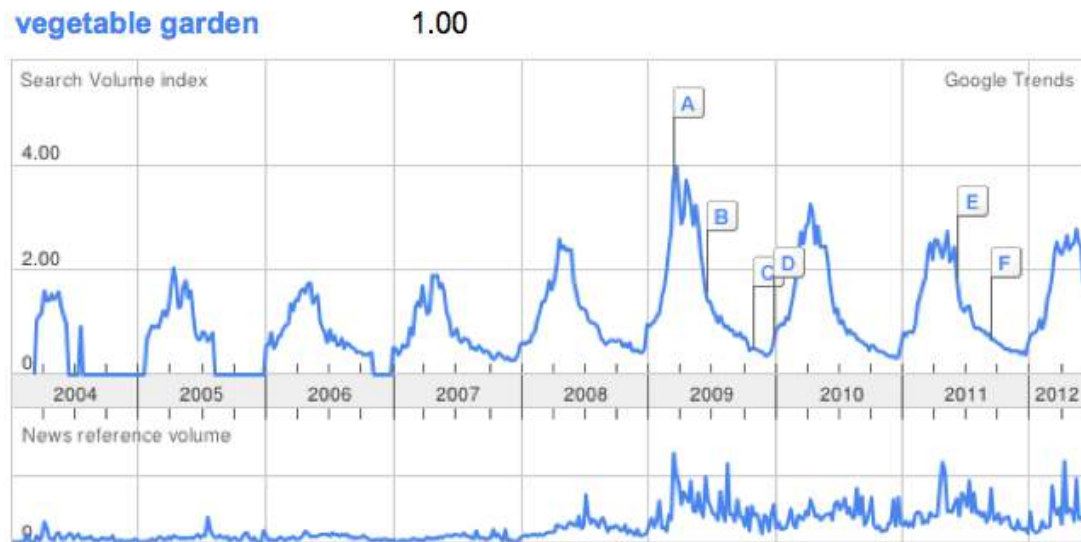


Figure 1: U.S. public and media interest in vegetable gardening in Google search traffic data. This graph was compiled on June 18, 2012 using the Google Trends tool, which shows trends in web searches since 2004 with 1.0 representing the average for “vegetable garden” relative to the number of all other Google searches. The trends shown here are confirmed in the National Gardening Association’s statistics on increased public interest in gardening. Spikes in public and media interest in vegetable gardening notably occur in 2009, the year First Lady Michele Obama planted an organic garden at the Whitehouse.

Societal interest in gardening for food purposes is a reflection of many developments in economic, social, scientific, environmental, spiritual, political, and cultural spheres related to the eating, growing, harvesting, and buying and selling of food in the 21st century—everything from food safety, food quality, food nutrition, food security, climate change, genetically modified food, to sustainable agricultural and gardening practices to name a few. The field of scholarly research has taken due notice of people’s growing interest in the subject; a body of academic research on people’s gardening behaviours and attitudes has emerged in response, particularly over the last 20 to 30 years. Searches for the term “garden\*” in the EBSCOhost Discovery Service database were conducted on June 11, 2012. A search limited to the time period between 1980 and 2012 yielded 27, 702 results. Using the same search term and changing the date range between 1948 and 1980 yielded 1,778 results. The research is wide and varied, crossing several disciplines such as environmental studies, geography, landscape architecture, nursing, health sciences, food studies, economics, sociology, feminist studies, psychology, history, literature, cultural studies, and rural studies. Some researchers, for example, such as Clayton (2007) have examined the impact of people’s gardening activities and motivations to garden on their attitudes towards the

environment while others have created and tested gardening identity scales in an attempt to understand how people's gardening behaviour impacts their identity with nature and their environmental gardening practices (Kiesling & Manning, 2010). Some researchers have even begun to focus on home gardening in particular, although more research is required (Bhatti & Church, 2000, p. 184; Kortright & Wakefield, 2011, p. 40). In one study, Kortright and Wakefield (2011) conducted an exploratory study on the impact of home gardening on food security in communities. In another study, McIntyre and Rondeau (2011) investigated the home gardening behaviour of Canadian farm women within the context of researching the rise in popularity of locally-based food movements. Yet, other researchers have focused on the socioeconomic and cultural aspects of gardening. Within this area, some researchers have focused on the role of gender in gardening and have found significant differences in men's and women's gardening behaviours and attitudes; for example, women more so than men tend to use less chemicals when gardening (Reyes-García et al., 2010, p. 241). Several of these scholars have argued that gardening research could benefit from the lens of gender analysis given these differences (Bhatti & Church, 2000; Buckingham, 2005; Hondageu-Sotelo, 2010; Reyes-García et al., 2010); however, gender analysis is often lacking in gardening research, thereby creating a knowledge gap about understanding differences in people's gardening behaviours and attitudes.

This paper is divided into three sections. The first section reviews some of the evidence in gendered gardening research and examines differences in the ways men and women garden; the second section reviews some recent literature in the field of gardening research that neglects gender analysis, seeking trends in that research; and in the third section, this paper develops the argument that gender analysis is critical in future gardening research. This section provides a potential theoretical framework for this research by examining Bhatti and Church's (2000) concept of the garden as a gauge for changing gender relations and by considering Allen and Sachs' feminist concept of the socio-cultural domain as a manifestation of women's complex and contradictory relationship to food.

### **Gendered Gardening Research**

Recent gardening statistics (National Gardening Association, 2009) showing women's current predominance in food gardening activity are not peculiar to the U.S. Evidence from academic research shows that while both women and men have been involved in home gardening, women in Nicaragua, Thailand and Tanzania have managed and cared for home gardens more than men have (Aguilar-Støen, Moe & Camargo-Ricalde, 2009, p. 56; Reyes-García et al., 2010, p. 240). These studies form part of a

growing body of scholarly work that employs gender analysis in gardening research; however, it is in the minority. A search for scholarly articles on gender and gardening illustrates the limited extent of this analysis within the larger field of gardening research. Searches in the EBSCOhost Discovery Service database were conducted on June 11, 2012. Using the term “garden\*” in the title and the term “women” in all text between 1980 and 2012 and limiting the search to scholarly articles, 2,724 results were found, some of which were not directly relevant. The studies contained in the database results list cover a variety of disciplines and topics such as gardening and its impact on health, female gardeners in history, gender and class in gardening literature and fiction, and women and community gardening. In comparison, a search using the term “garden\*” in the title in the same time period yielded 27, 702 results, some of which were not directly relevant to the topic. While database searches may not be fully reliable in capturing all gendered gardening research given the limitations of databases, the searches provide at least a glimpse into some of the different types of gardening research related to gender. Library database searches are limited because they rely on classification systems developed by librarians who have biases in organizing information.

A review of recent scholarship on gender and gardening shows that a theme of differences in men’s and women’s gardening behaviours marks the research. This research often includes the feminist concept of gendered divisions of labour in the private or domestic sphere (ie. unpaid work in the home) to explain these differences. One such study, Reyes-García et al.’s (2010) “Gendered Homegardens: a Study in Three Mountain Areas of the Iberian Peninsula,” addressed the gardening management activities of Spanish men and women by developing a unique research method combining both ethnographic and quantitative data. The researchers classified gardens as men’s, women’s or shared, and separated and noted gardening tasks based on gender (pp. 238-239). Reyes-García et al. developed their unique approach after examining previous research that showed the difficulty of “disentangling” gendered differences in home gardening practices “because men and women generally share gardening activities and because the role of women in gardening is often less visible than the role of the men, as women often assume the tasks most closely linked to the domestic realm (Howard, 2003)” (p. 237). Thus, the researchers aimed to acknowledge the complexity of gendered gardening practices in their study and accordingly adapted their research methods to capture that complexity. As a result, the study provided detailed percentage breakdowns of men’s versus women’s gardening activities, which is a strength of the study, making it stand out in the field of gardening research. In 2008, the researchers interviewed 90 elders, including both men and women, in three different areas of the Iberian Peninsula to conduct ethnographic interviews; the percentage of men and

women interviewed was not provided. The researchers also examined 254 home gardens in 58 villages (pp. 238-239) and conducted a survey with the voluntary participation of the person who primarily tended the garden (p. 239). While the gender composition of the sample is not directly specified in the study, evidence from the researchers' data analysis of men's gardens, women's gardens and shared gardens shows that the sample of 254 households comprised anywhere between 54% and 64% men and anywhere from 26% and 36% women (Reyes-García et al., 2010, see chart p. 243). The researchers' findings revealed gendered differences, for example, in organic gardening practices and use of water: Spanish women tended to engage in organic gardening practices (98.5%), such as use of cow manure for fertilizer, and to rely on rain (24.2%) and sprinklers and drip systems (22.7%) more so than Spanish men (92%, 11.7%, and 8.8% respectively) (Reyes-García et al., 2010, p. 241). These findings on organic gardening practices replicated evidence in Bhatti and Church's (2000) foundational research on gardening and gender, in which they showed British women were more likely than men to be interested in organic gardening as far back as 1999 (p. 189). Reyes-García et al. found, furthermore, that women's gardens contained more biodiversity than did men's per 100 m<sup>2</sup> of cultivated land (p. 242) and that in terms of size and location, men's gardens tended to be "larger, more distant, and generally more south-facing" than women's gardens and gardens shared between men and women (p. 240). The researchers concluded that while gardening was a shared activity between men and women, men had "a predominant role in all activities except in the processing of foods. The role of men is especially predominant in preparing land" (Reyes-García et al., 2010, p. 240). Thus, gendered divisions of labour became evident in the gardening activities of Spanish men and women in the study's sample. Reyes-García et al. concluded that more research is needed to further investigate divisions of labour in terms of the physical spaces used and species and varieties grown by men and women (p. 244).

Buckingham's study (2005) on allotment gardening in Britain furthermore found some similar results about women's gardening practices. Buckingham stated evidence shows that since the 1960s, more women have been practicing allotment gardening, a system of gardening traditionally dominated by men since the 17th century whereby parcels of land are paid for and maintained by individuals to garden for harvesting food (pp. 173-174). While allotment gardens are not home gardens per se, they are a type of personal gardening practice for the purpose of food production and therefore are relevant to this discussion. For her research, Buckingham relied on a number of allotment use surveys conducted by the National Society of Allotment and Leisure Gardeners' in three boroughs in West London, which contain data on age, sex and ethnicity; designed a questionnaire to survey a total of 12 out of 34 allotment society

representatives; conducted in-depth interviews with seven female allotment holders; and assessed a number of articles on changes in allotments published between 1999 and 2002 in home/garden and fashion magazines (p. 172). The gender composition of the surveys used in Buckingham's study was not directly addressed, thus creating a limitation in the research: presenting gender composition is critical for thorough gender analysis. The study does present, however, the gender composition in two out of the three boroughs in the allotment use surveys. It states that in one borough, 34% of respondents were women, thus making men 66% of the respondents, and that in the other, 41% were women, thus making men 56% of the respondents (Buckingham, 2005, p. 174). Buckingham found that women plot holders were more motivated than men to garden in order to grow food free of chemicals, and women were more likely than men to use sustainable gardening practices that eschewed the use of chemicals (p. 172, 175). Therefore, her research, like the research of Reyes-García et al., confirmed findings on organic gardening practices in Bhatti and Church's (2000) research on gardening and gender in Britain, the importance of which will later be discussed. Citing statistics that show women make up most of Britain's organic farmers despite being underrepresented in British farming, Buckingham tentatively concluded that "it is women, regardless of social class/education, who are creating an impetus toward more environmentally sustainable methods of local food growing" (p. 177). Her study, furthermore, provided some context for gendered gardening practices by shedding light on historical developments. Buckingham reviewed the history of gardening in Britain, which shows that men, not women, have traditionally been linked to food gardening since the 17<sup>th</sup> century with the exception of the Second World War, a time during which women as well as men were encouraged to grow a garden in the "Dig for Victory" campaign (p. 173). Buckingham posed questions to guide future research on gardening, asking, "What is it, then, about turn-of-the-millennium urban Britain which appears to be stimulating a significant shift towards women as urban subsistence food growers?" (p. 174). She concluded her study, stating that the increase in female allotment holders in Britain has larger implications for gardening in the 21<sup>st</sup> century: "The paper suggests that this shift in gender balance is likely to influence what is grown and how it is grown and that this is likely to have implications both within and beyond the allotment, both for urban food growing and the environment more generally" (Buckingham, 2005, p. 177). In conclusion, Buckingham stated that public officials interested in increasing sustainable food practices through the localization of food production "would be well advised to consider gender as a factor in achieving these" (p. 178).

Of worthy note in the field of gendered gardening research is also McIntyre's and Rondeau's (2011) research on Canadian farm women's attitudes towards local food

movements, which include calls for people not only to buy local foods but also to grow vegetable gardens. While being more focused on other issues related to local food provisioning, this research nevertheless provided insight into farm women's constraints to take up gardening as a result of gendered divisions of labour within the household. McIntyre and Rondeau conducted face-to-face semi-structured interviews with 22 farm women from Alberta, Ontario, and Nova Scotia. They also used empirical data gathered from their previous recent research on Canadian farm women's food provisioning activities and consulted scholarship on local food movements (pp. 117-118). The farm women's demographics were similar to the demographics on women in the National Gardening Association's survey (2009): the women's average age was 41.7 years, the majority of the women had some post-secondary education, and all participants were married (McIntyre & Rondeau, 2001, p. 118). McIntyre and Rondeau found that despite having a proclivity to grow food, Canadian farm women did not necessarily have the time or adequate help to grow a garden and to attend to its ensuing time-consuming tasks of preserving the harvest and cooking from scratch (McIntyre & Rondeau, 2011, p. 121). More specifically, domestic duties got in the way. Thus McIntyre's and Rondeau's research succeeded in further problematizing gendered gardening practices in that it highlighted the need for more research in order to compare and contrast rural and urban women's gardening experiences as they relate to gendered domestic divisions of labour (p. 117).

Thus, the evidence examined in this section leads one to conclude that gender analysis yields contributions to gardening research by distinguishing differences in the ways women and men garden.

### **Non-Gendered Gardening Research**

As previously mentioned, there is a considerable amount of research on the topic of gardening given its interdisciplinary nature. For the purpose of this paper, a small number of scholarly articles were sampled. Using the EBSCOhost Discovery Service database, articles from a variety of journals were selected; they included the *Journal of Environmental Psychology*, *Ecology and Society*, *Agriculture and Human Values*, and the *American Journal of Community Psychology*. The topics and approaches varied. Worthy of note is Clayton's study (2007) on the impact of people's gardening activities and motivations to garden on their attitudes towards the environment and Kiesling's and Manning's (2007) research on the impact of gardening behaviour on people's identity with nature and their environmental gardening practices. While both studies arrived at interesting results, they both did not acknowledge gender as a variable to analyze in their



findings on gardening behaviours and attitudes despite the overwhelming presence of women in the research samples.

Clayton's study (2007) "Domesticated Nature: Motivations for Gardening and Perceptions of Environmental Impact" relied on a convenience sample of 126 American participants who were both food and non-food gardeners. The sample comprised 100 women, 22 men and 4 people who did not specify gender (p. 217). Clayton conducted a survey to determine gardeners' motivation for gardening, their use of the yard, their perceptions of the landscape around their home as a part of nature, and their motivations for gardening practices (p. 217). She concluded that despite gardeners' appreciation of nature as a key motivator to garden, that appreciation was not significantly correlated to gardeners' attitudes towards use of sustainable gardening practices to protect nature such as reduced dependence on chemicals and maintenance of a healthy ecosystem (pp. 219, 222). "Protecting nature through sustainable practices did not seem very salient to respondents. The yard was not clearly seen as part of the ecosystem," she wrote (p. 222). In Clayton's analysis of the weakness of her study, she acknowledged that the convenience sample was selective and did not represent the population (p. 223). The sample was indeed skewed in favour of women (79%) over men (17%); it by no means came close to reflecting the National Gardening Association's (2009) demographics of people who participated in food gardening, which showed 54 % women compared to 46% men (p. 8). Clayton's study does not appear to question why more women than men were included in the sample and what the overrepresentation of women, or conversely, the underrepresentation of men, might have to say about gender in relation to gardening. This is arguably another limitation. The study did not suggest that its findings may be more applicable to female gardeners in the general population than to male gardeners; for this reason, it appears to have committed fallacy of the wrong level by implying that results based largely on a sample of women can be applied to the population of gardeners as a whole. In this way, Clayton's study made gender an invisible variable; it also neglected to problematize its findings by questioning differences in motivations between women and men, no matter how few men were included in the sample. Based on this paper's previously examined findings in gendered gardening research, evidence suggests that gender is linked to gardeners' attitudes towards sustainable gardening practices (Bhatti & Church, 2000; Buckingham, 2005; Reyes-García et al., 2010); however, Clayton's reference list avoided including any of this research. Had Clayton framed her research problem with gender analysis in mind, she may have used a more rigorous sampling technique that was more representative of the gardening population and may have tested for gender differences. Instead, her research avoided gender altogether, thereby leaving unanswered critical

questions in the findings. Clayton's study thus ended up presenting gardeners as non-gendered subjects when women dominated the sample.

Similarly, while Kiesling's and Manning's (2007) study on the impact of environmental gardening identity on sustainable gardening practices yielded interesting results related to the relationship between nature and identity, it ignored answering critical questions related to gardening and gender. The researchers used an environmental identity scale developed by Clayton to measure gardeners' identification with nature, and they also developed and tested their own environmental gardening identity scale for its ability to predict people's ecological gardening practices. Kiesling and Manning used a randomized sample of 464 self-identified gardeners from urban and suburban property owners in the United States and asked the participants to complete a questionnaire (p. 318). The sample comprised 64.6% women and 35.2 % men and reflected several demographic trends in the National Gardening Association's survey (2009), although the sample did not reflect the association's gender distribution for levels of interest in gardening: 54% women compared to 46% men. While the researchers admitted that their results revealed some flaws in their environmental gardening identity scale, they concluded that their results did show that there is a "strong positive relationship between environmental identity and engagement in ecological gardening practices. There is a significant connection between individuals' decisions about gardening practices and the extent to which they include a connection to nature in their sense of self" (p. 324). Kiesling and Manning, however, did not mention a significant limitation of their study: it was overrepresented by women. Like Clayton's study, Kiesling's and Manning's study did not investigate gender as a variable in gardening identity, and it furthermore drew conclusions about gardeners in general based on a sample biased in favour of women. Opportunities for distinguishing and problematizing men's and women's gardening behaviours and attitudes were once again missed. None of Kiesling's and Manning's findings were differentiated by gender, leaving one to conclude that there were presumably not any differences in opinions and behaviours between men and women in the sample. Thus, their study implied that gardening subjects are non-gendered. Gender analysis would have benefitted this research in light of the evidence presented in some studies on gendered gardening, which has revealed that more women than men have ecological attitudes and behaviours towards gardening (Buckingham, 2005; Reyes-García et al., 2010).

Kortright's and Wakefield's (2011) study "Edible Backyards: a Qualitative Study of Household Food Growing and its Contributions to Food Security" merits some discussion for both its dissimilarities and similarities with the research thus far examined. Kortright and Wakefield used qualitative research methods for exploratory analysis of

the impact of gardening on food security in two Toronto neighbourhoods. They conducted in-depth interviews with 23 gardeners to find out what growing food means to them (p. 41). However, unlike the samples that were overrepresented by women in the other studies, Kortright's and Wakefield's sample included more men (61 per cent) than women (39 per cent). Furthermore, Kortright and Wakefield inaccurately referred to their sample as being "fairly evenly divided in terms of gender" (p. 43). They neglected to question the overrepresentation of men in their sample, which is an oversight and limitation in their research. Critical to this paper, it is important to emphasize that like the research of Clayton (2007) and Kiesling and Manning (2007), Kortright's and Wakefield's study buried issues related to gender, thus making the participants appear as if they are non-gendered subjects when men dominated the sample. Their research presented, for example, generalized comments about gardeners, such as gardeners "devoted a fairly large area of garden to food," ranking tomatoes the most common type of food grown (p. 44); gardeners shared a common concern about the safety of purchased food; and gardeners liked controlling chemicals that go into growing their food (p. 48). Some of these findings ignore Reyes-García et al.'s (2010) call for more research comparing men's and women's uses of gardening space and preferences for growing variety and species.

Moreover, Kortright and Wakefield (2011) developed a frame for understanding gardeners' profiles by identifying five basic types of gardeners: 1) cooking, 2) teaching, 3) environmental, 4) hobby, and 5) aesthetic gardeners (p. 50). Under each profile, the researchers provided block quotes from their interviews; all the quotes were from men in this section of the paper, yet the researchers drew conclusions about gardeners in general. For example, under environmental gardener profile, Kortright and Wakefield presented the following findings: "All of the environmental type gardeners identified also used water barrels and composters in an effort to increase the sustainability of their gardens" (p. 45). It is unclear, however, how many men compared to women made up this profile; the same is true for the other four profiles. This type of information would have been helpful in light of other research showing that women have engaged in more sustainable gardening practices than men (Buckingham, 2005; Reyes-García et al., 2010). Kortright's and Wakefield's research presented general statements about gardeners and missed opportunities to distinguish men's and women's perceptions of gardening. The study's sampling technique was furthermore questionable, thereby casting a shadow of some doubt on the study's results.

Out of fairness, it is important to emphasize that there is some gardening research that peripherally addresses the issue of gender, such as van Heezik's, Dickinson's, and Freeman's (2012) study. It analyzed the role of communication in encouraging New

Zealanders to include more biodiversity in their private gardening practices. While this study is not directly related to food gardening, it is still relevant to the discussion because of its similar research methodology used to study gardening. The scholars examined people's values and attitudes about the environment using mixed-method research, which entailed usage of an environmental attitude scale called the New Ecological Paradigm. Their sample included 55 householders with gardens and comprised 39 women and 16 men, most of whom had post-secondary education and most of whom were 45 years of age and older (van Heezik, Dickinson & Freeman, 2012, *Householders*, para. 1; *Characteristics of Householders and Their Gardens*, para.1), thus reflecting some of the demographics in the National Gardening Association survey (2009). Van Heezik et al. directly acknowledged the overrepresentation of women in the sample, postulating that it resulted from the householders' self-selection for the study. The scholars concluded, "It is possible that older, well-educated women that have long experience with gardening may be more receptive to altering their gardening practices; however, the most frequent reason cited for joining the study was to support university research" (*Evaluation of Knowledge, Values, Attitudes and Evidence of Change*, para. 4). Unlike some other researchers, van Heezik et al. also directly addressed the variable of gender in their study, showing evidence that gender did not have an influence on gardeners' attitudes towards the environment (*Knowledge of, and Values and Attitudes Toward, Biodiversity*, para. 3). They concluded that communicating with gardeners had a positive correlation with environmental gardening practices. Their findings revealed almost two-thirds of participants reported a difference in how they perceived their gardens, 40% in how they understood their gardens as being an ecosystem, and 26% in how they actually gardened (*Evidence for Changes in Knowledge, Values, Attitude, and Behavior*, para. 2).

### **Theorizing Women and Food Gardening**

This discussion has shown that there is adequate evidence to support the need for more gender analysis in gardening research, including research that focuses on domestic food gardening. Reyes-García et al. (2010) approached the lack of gender analysis in academic research and reached a conclusion that provides critical context for the issues addressed in this paper:

Because gardening rarely seems to be an exclusive women's endeavor and because scientific research (including ethnobotany, see Howard 2006b) often suffers from gender bias, it is not surprising that researchers have often overlooked the role of women in gardening. Researchers have noted that neglecting women's role in gardening often affects the selection of informants, which further shapes which

activities and knowledge are analyzed (Greenberg 2003; Howard 2003). (Reyes-García et al., 2010, p. 243)

Hondageu-Sotelo (2010) added to this chorus of criticism in her article “Cultivating Questions for a Sociology of Gardens.” She assessed the lack of American academic interest in gardening in the field of sociology, arguing that gardening can be framed in issues that typify the discipline of sociology: “But I also think gardens reflect prevailing social relations of power, culture, race, class, and gender, and there are significant social and environmental consequences connected to the way we garden” (p. 499). Hondageu-Sotelo argued researchers should examine how gendered divisions of labour in the household impact women’s gardening activities given that many women who are mothers of young children are driving growth in backyard gardening (p. 500). Indeed, McIntyre’s and Rondeau’s observations that Canadian farm women have faced constraints to garden because of their domestic duties supports Hondageu-Sotelo’s point.

Hondageu-Sotelo’s observations highlight themes that have emerged in the research of Bhatti and Church (2000) on gardening and gender; Bhatti and Church figure prominently in her citations. Other researchers who explore the social and cultural aspects of gardening also cite Bhatti’s and Church’s ideas on gender relations in garden spaces (Buckingham, 2005; Longhurst, 2006; Shillington, 2008). For this reason, Bhatti’s and Church’s ideas merit some discussion for providing a theoretical framework for future gendered gardening research. In 2000, British scholars Bhatti and Church studied contemporary gardens as leisure sites and as spaces that mirror wider social relations such as gender relations. They examined primary data on British men and women’s gardening behaviours and attitudes and interviewed 77 people reached through a survey they conducted at garden centres. The interviews revealed many interesting differences between men and women, including the ways in which they sought control over gardens (Bhatti & Church, 2000, pp. 192-193). Bhatti and Church quoted one woman who said: “My husband is more interested in the garden these days, and more willing to do the work, which is a good thing because I can do much less...now the garden isn’t mine but ours in a way it hasn’t been before and it doesn’t have the air of compromise that so often accompanies the interior decoration of the house” (p. 193). This excerpt sheds light on Bhatti’s and Church’s observation that gardening practices are interlinked with gendered divisions of labour in the home: that is, women’s gardening activities are related to women’s time and activities related to home-making (p. 193). Bhatti and Church concluded that gardens reveal complex relationships between men and women and must not be seen “simply as sites where men and women adopt different roles, but as places shaped by the continual restructuring of gender relations” (p. 192). They

maintained that gender relations are both reinforced and re-negotiated in gardens; they suggested that differences in men's and women's gardening behaviours and attitudes serve as an indicator of negotiated divisions of labour within the home (Bhatti & Church, 2000, pp. 192-193). Thus, Bhatti and Church are credited for linking gardening to the feminist theory of gendered divisions of labour in the private sphere of the home. This link has been noted and referenced by other scholars. In her work on the increase in female allotment holders in Britain, Buckingham (2005) wrote, giving credence to Bhatti's and Church's ideas:

Bhatti and Church's 2000 analysis of domestic gardening suggests that changing gender roles in the garden are encouraging a re-negotiation of domestic divisions of labour. Certainly interviews with individual women allotment holders to date suggest that this is a possibility, with respondents arguing that, in their experience, there is greater gender equality in their domestic division of labour, or that their allotment activities have resulted in their male partners undertaking more domestic tasks." (Buckingham, 2005, p. 177)

Future research on gendered gardening with a focus on domestic food gardens would also benefit from building on Bhatti's and Church's work by exploring the link between gardening and gendered divisions of domestic labour given the interconnectedness of the two variables and the complex relationship between them. Future research could also potentially benefit from feminist theoretical contributions made in the scholarly field of women and food, contributions that also rely on the concept of gendered divisions of labour. Allen and Sachs (2007) are well-recognized American feminist theoreticians in the study of women's complex and contradictory relationship to food in terms of production and consumption. While examining gender relations in the food system in the United States, Allen and Sachs identified three analytical concepts to interpret women's experiences: the material domain, the socio-cultural domain, and the embodied domain. Pertinent to this discussion is Allen's and Sachs's notion of the socio-cultural domain, which explores women's unpaid food-related work in the home. It is beyond the scope of this paper to address in any depth Allen's and Sachs's notion of women's complex and contradictory relationship to food in the socio-cultural domain. However, an example they considered is that while women predominantly do the cooking in households, more men than women are chefs (pp. 9-10). The researchers stated that in most societies, women are mainly responsible for the time-consuming labour required of food provisioning: "regardless of culture, class or ethnicity, the majority of women cook and serve food for their families—a cultural universal of care and sustenance" (p. 9). They contended that despite women's entry into the workforce, the mental, physical and caring labor for food preparation falls twice as

much on women than on men (p. 10). Little, Ilbery and Watts (2009) further supported Allen's and Sachs's observations in their study on gender and the consumption of local food by suggesting that gendered domestic labour divisions have resulted in most women being responsible for all activities related to supporting local food initiatives, and those activities invariably require more of women's time in the preparation, cooking, and preservation of food (p. 203; pp. 202-204). Allen and Sachs (2007) furthermore stated that feminists have disagreed whether women's food-related work in the home empowers women or reinforces their subordinate gender roles (p. 3), thus highlighting another aspect of women's complex and contradictory relationship to food within the socio-cultural domain. This paper proposes that it may be possible to conceive of women's current food-related gardening activities as being related to women's food provisioning activities as discussed in Allen's and Sachs's socio-cultural concept. It may be worthwhile for researchers to examine women's current role in gardening for food production as an extension of their domestic duties. Indeed, some researchers have already found this to be true (McIntyre & Rondeau, 2011; Reyes-García et al., 2010, p. 240). For this reason, Allen's and Sachs's socio-cultural concept of women's gendered relationship to food could provide a rich theoretical framework for gardening research.

## **Conclusion**

Over the last few years, research on the gendered nature of domestic gardens has demonstrated that differences do exist in women's and men's gardening behaviours and attitudes; some studies have even developed methodological approaches to study these gender differences, which can be difficult to ascertain (Reyes-García et al., 2010). Some of the findings in the field of gendered gardening research appear to be specific to certain countries that have more traditional gendered divisions of labour in the home such as Spain (Reyes-García et al., 2010), while other findings appear to be more universal. There is emerging evidence that suggests women are leading the way in terms of both organic food gardening practices and sustainable gardening practices (Bhatti, 2000; Buckingham, 2005; Reyes-García et al., 2010). One could interpret First Lady Michele Obama's planting of an organic garden on the Whitehouse's front lawn as an example of such female leadership.

Researchers interested in gender have called attention to the need for more gender analysis in all areas related to gardening; however, that call appears to have gone unheard. One can find gardening research that neglects gender as a variable worthy of examination. Some themes have begun to surface in this body of research. Studies in this category have tended to contain samples biased in favour of female participants, yet these studies have drawn conclusions about gardeners in general. As a result,

“gardeners” in these studies appeared to be non-gendered subjects when women dominated the sample. It appears that some researchers avoided asking the obvious question, the answer to which may have resulted in framing a different research problem: Why have there been more women than men in the research samples on gardening? Why are more women seemingly interested in gardening than men? Some researchers also appear to have overlooked asking how men and women may differ in their gardening behaviours and attitudes, thereby missing opportunities to identify research methods to answer such questions.

This paper’s investigation of some of the literature in the field supports the need for more gendered gardening research. There is arguably the need for more research to confirm and explain existing research findings on the differences in women’s and men’s gardening behaviours and attitudes. More research is also required to address the existing many unanswered questions related to the ways in which women and men garden. This paper has furthermore maintained that all gardening research would benefit from more rigorous sampling in order to obtain samples that represent the population of gardeners; gender distribution in the samples should be clearly identified in the research. Perhaps, some of the research would benefit from use of a control group to help distinguish gendered differences in gardening perceptions and behaviours. Importantly, more rigorous research methods that identify and examine gendered categories of variables would improve all future gardening research. Findings must be presented showing demarcation between males and females. The research of Reyes-García et al. (2010) provides an excellent benchmark in the rigor required of future research. Some of the research conducted could be reframed to purposefully seek exploration of gender differences through more representative samples and rigorous gender analysis.

Within the growing field of gendered gardening inquiry, some theoretical concepts have emerged that could assist this future research and help frame research questions. Scholars Bhatti and Church (2000) have problematized garden sites as fascinating spaces within which the evolving relations between women and men are unfolding, serving as a gauge for women’s and men’s changing roles in the domestic division of labour. This paper contends that feminist theoretical frameworks on the scholarship of women and food could also be applied to studies on gendered food gardening. Allen’s and Sachs’s (2007) socio-cultural concept of women’s gendered relationship to food-related activities within the private sphere of the home could be of some assistance.

Increased scholarly research on gardening would be timely. Public interest in gardening, especially in food gardening, is not waning; it is increasing. In response to global concerns about environmental sustainability, climate change impacts and



population growth, government officials, non-profit organizations and grassroots food activists across the world have been developing and continue to develop local food initiatives, including the promotion of more vegetable gardening. Several scientists and experts from various backgrounds agree the industrial food system as it exists will have to change, and that will necessitate changes in the way people consume and produce food. Some even predict that home gardening will play an increasing role of importance (Bomford, 2010, p. 127; Deppe, 2010, pp. 2-4; Rubin, 2009, p. 221; Okvat & Zautra, 2011, p. 375). In the face of evidence that women gardeners appear to be leading the growth in interest in food gardening, examining women's role in impending societal change concerning food production and consumption will be critical. Equally critical, however, will be studying and understanding men's role in this change. In light of this context, it indeed would be an oversight to neglect gender analysis in much needed gardening research.

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# **A Discounted Threat: Environmental Impacts of the Livestock Industry**

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## **ABSTRACT**

This article provides an overview of the environmental effects of the livestock industry. Current industry practice, specifically the proliferation of concentrated animal feeding operations as the primary means of production, has left far-reaching ecological consequences in its wake. Animal agriculture is implicated in numerous environmental threats including rising greenhouse gas emissions (particularly through release of nitrous oxide and methane, in addition to carbon dioxide), overconsumption of water for both live animals and feed crops, and decreased water quality. Furthermore, localized pollution owing to significant animal waste has contaminated many regions and compromised human health. Alterations of land use and the resulting loss of biodiversity are also of major concern. The problem has expanded as developing countries' demand for these products grows – however, the issue has tended not to be a focal point of environmental debate. This article details the environmental destruction wrought by current practices, while outlining recommendations for reducing the environmental toll at both the individual and systemic level.

## **Introduction**

Anthropogenic effects on the environment have increasingly become a major concern in the 21<sup>st</sup> century, and efforts to mitigate these effects are of critical importance. The industrialization era in the middle of the 20<sup>th</sup> century accelerated the

extraction of natural resources for the production of goods and services, and has since been the subject of environmental contention. Extraction of oil and natural gas and the subsequent burning of fossil fuels have received the most criticism for their role in global warming. Similarly, production of plastics and other non-biodegradable material is a recognized source of pollution. Although these factors contribute significantly to environmental degradation, they have been given a disproportionate amount of attention when compared to the pervasive and wide-ranging environmental consequences of animal agriculture. The livestock industry includes both extensive pasture based farming, and intensive, factory-farm production, the latter having a far greater impact on the environment.

Factory farms, otherwise known as Concentrated Animal Feeding Operations (CAFOs), are an economically efficient, energy intensive method of rearing animals for human consumption, and are characterized by dense populations of farmed animals kept in warehouses rather than in pasture. CAFOs originated in the 1950s and currently account for the majority of the meat produced in North America and Europe (FAO, 2006, pg.32). The proportion of factory-farmed meat is steadily increasing in the developing world as the demand for meat intensifies and markets in these countries respond accordingly (Pluhar, 2009, p. 456). In total, approximately 56 billion terrestrial animals are reared for consumption each year (Koneswaran & Nierenburg, 2008, p. 578) – eight times the size of the human population – and the livestock population is expected to double by the year 2050 (Ilea, 2009, p. 153). Factory farms enable high outputs of meat production at relatively low inputs of cost and labour. Although economically favourable, this intense farming method produces extensive amounts of waste and hazardous emissions that are costly to the environment (Patel & Centner, 2010, p. 13).

More recently, environmentalists have come to associate the practice of factory farming with rising greenhouse gas emissions, pollution, environmental degradation and loss of biodiversity. Direct correlations can be shown between the abundance of animal waste produced and high concentrations of pollutants and greenhouse gases emitted at each site. A larger impact can be attributed to the indirect environmental toll created through feed crop production. This paper outlines the environmental ramifications of the livestock industry by highlighting the importance of this issue, and the need for an increase in public concern.

## Results

**Atmosphere.** In total, the livestock industry accounts for 18 percent of anthropogenic greenhouse gas emissions (FAO, 2006, p. 112). Carbon dioxide, methane, and nitrous oxide are the three main constituents that account for this value. Carbon dioxide (CO<sub>2</sub>) has the most significant impact on global warming due to the large quantities emitted primarily through burning fossil fuels (Koneswaran & Nierenburg, 2008, p. 579). Each year, factory farms contribute 9 percent of the total CO<sub>2</sub> emissions, emitting 41 million tonnes of CO<sub>2</sub> for feed crops, 90 million tonnes for farm operations, 2.4 billion tonnes as a result of deforestation and 28 million tonnes from cultivated soils (p. 579). Although atmospheric concentrations of nitrous oxide and methane are considerably lower than carbon dioxide, their contribution to global warming is substantial. The global warming potentials of methane and nitrous oxide are 23 and 296 times greater, respectively, than that of carbon dioxide and therefore can significantly alter the global temperature, despite smaller emissions (Mann & Kump, 2010, p. 29). Animal manure and synthetic fertilizers produce excessive amounts of nitrogen, which amount to 65 percent of total anthropogenic nitrogen released into the atmosphere (FAO, 2006, p. 114). Methane is produced in large part due to enteric fermentation of ruminants, and is released by way of animal flatulence as well as manure. These processes total 35-40 percent of human-induced methane emissions, measuring 86 million tonnes worldwide (Koneswaran & Nierenberg, 2008, p. 580). All told, the livestock sector exerts a substantial influence on global climate, outpacing even the total global emissions of human transportation.

Pollution is another major issue surrounding the pervasive practice of factory farming. In the United States, over 133 million tonnes of manure is produced each year (Burkholder et al., 2007, p. 308). Some of this manure is treated and used as fertilizer, while most of it is stored in large waste lagoons. In either case, a number of toxic gases are released containing chemical compounds such as ammonia and hydrogen sulfide (Heederik et al., 2007, p. 298). The livestock industry contributes 64 percent of anthropogenic ammonia, leading to acidification of ecosystems and to production of acid rain. The distinct odour of animal waste can be attributed to hydrogen sulfide, a powerful and poisonous gas (p. 298). Other pollutants include bacterial species, antibiotic residues and endotoxins, all of which have an impact on surrounding communities (Mirabelli et al., 2006, p. 591). Studies have confirmed a heightened incidence of respiratory symptoms, headaches, diarrhea, burning eyes and sore throats occurring among neighbouring communities. Research has also demonstrated a decreased quality of life among residents living near these operations (p. 591).

**Water.** Many components of the livestock industry have a considerable influence on water quality and availability. Industrial agriculture uses approximately 70 percent of available freshwater, of which more than 8% is allocated for feed crop irrigation (Henning, 2011, p. 8). Perhaps the most direct and destructive environmental consequence of factory farming is water pollution. As mentioned, livestock produces significant amounts of manure, usually more than a single farm can manage. Often, run-off occurs in fields where manure was applied as fertilizer, or waste lagoons overflow due to heavy rainfalls or ruptures (Burkholder et al., 2007, p. 308). Typically, the run-off makes its way into local waterways or passes through the soil into groundwater (Mallin & Cahoon, 2003, p. 370). Manure is rich in compounds of nitrogen, phosphorus, and ammonia. When excessive amounts of these compounds are added to the environment, they can lead to noxious algal blooms, causing eutrophication in both fresh and coastal waters, killing fish, and destroying coral reefs (p. 371). Manure is also composed of a variety of parasites, bacteria, viruses, and antibiotic residues that can pollute water supplies, thereby causing many human health issues such as gastrointestinal distress, infections (Burkholder et al., 2007, p. 308) and large-scale bacterial disease outbreaks (Mallin & Cahoon, 2003, p. 380).

**Land Use Changes.** Concentrated animal feeding operations constitute the largest anthropogenic use of land (FAO, 2006, p. 270). The proportion of land utilized for the production of meat dwarves that of any other industry. CAFOs convert wooded areas to grazing fields or cropland on a large scale; one-third of the Earth's land surface is used for animal agriculture and approximately 33 percent of the total available agricultural land is used for feed crops (p. 271). This is particularly troubling in Latin America, where deforestation of the Amazon Rain Forest – one of Earth's most biologically rich areas – has resulted in the largest net loss of forested areas for grazing and feed crops (p. 91).

**Biodiversity.** The biosphere is currently undergoing a 6<sup>th</sup> mass extinction (Barnosky et al., 2011, p. 51). This widespread loss is owed to rising global temperatures, habitat destruction, pollution, and overexploitation (Primack, 2010, pp.196-202, 211-212, 215-243). Loss of species is currently taking place at a rate 50-500 times higher than historical extinction rates recorded by the fossil record (Woodruff, 2001 p. 5471). The livestock industry has a major influence in perpetuating such calamitous events, due to its contribution to climate change, pollution, land degradation, and facilitation of invasive species. Of the 825 terrestrial ecosystems around the world, 306 are reported by the World Wildlife Organization to be threatened as a consequence of factory farming (FAO, 2006, p. 215). Conservation International has implicated the livestock industry in negatively impacting more than half of the most biologically rich regions in the world (p. 215).

## **Discussion**

The livestock industry's effects on our current environmental condition has been largely underappreciated or ignored. The United Nations has declared concentrated animal feeding operations to be "one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global" (FAO, 2006, p. 22). Yet, CAFOs are marginalized in public environmental debate. The broad impact of factory farming on global climate change has not been given its due attention. Factory farming contributes to large changes in the nitrogen, carbon and methane cycles, all of which operate on a global scale. Carbon dioxide is emitted at each stage of meat production - indirectly by deforestation and cultivation of feed crops, and directly from on-site energy consumption and transport (Koneswaran & Nierenberg, 2008, p. 579). To some extent, emphasis on the reduction of carbon emissions has overshadowed the importance of nitrogen and methane emissions on climate change. Factory farms contribute 65 percent of the total anthropogenic nitrogen emitted, along with 40 percent of atmospheric methane. It is troubling that these issues have only played a minor role in climate change awareness, considering that changes in the nitrogen and methane cycles have a greater impact on our environment than carbon (p. 578). With its complicity in global warming, the livestock sector can be held partly accountable for glacial melt, increased sea-levels, rising ocean temperature, extreme weather events, habitat loss, displacement, and species extinction (Kump et al., 2010, pp. 321-327, 364-372).

The availability of freshwater and degradation of water reserves is an ever-increasing global concern. Water scarcity is increasing – 64 percent of the world population is expected to live in water-stressed areas by 2025 (FAO, 2006, p. 24). The livestock industry contributes substantially, albeit indirectly, to global water storage, and is therefore usually overlooked in the planning of water-conservation strategies. Of all water consumed worldwide, 70 percent is used in agricultural processes (Henning, 2011, p. 8). Of these agricultural processes, one third is designated to feed crops. Thus, most of the freshwater used in agriculture is directed toward sustaining livestock production. To illustrate a sense of perspective, it requires 100 times more water to produce 1 kg of animal protein compared to 1 kg of plant protein (p. 8), when all levels of production are considered. The scope of the water problem is further highlighted by the Food and Agriculture Organization of the United Nations, who identify the livestock industry as "the largest sectoral source of water pollution, contributing to eutrophication, "dead" zones in coastal areas, degradation of coral reefs, human health problems, [and] emergence of antibiotic resistance" (p. 24). The majority of water used for livestock re-



enters the environment in the form of wastewater and manure, limiting the availability of fresh water.

The expansion of feed crops and grazing areas into natural ecosystems is causing negative environmental impacts. Land use change contributes to many global issues including climate change, which is exacerbated by the loss of carbon sequestering vegetation, in addition to water depletion. The latter issues also impact upon biodiversity and the upward trend in extinction rates (FAO, 2006, p. 185). Biodiversity plays an integral role in fully functioning and healthy ecosystems, which in turn benefit humans through the services they provide. These services, aptly named “ecosystem services,” include processes involved in air and water purification, carbon sequestration, waste decomposition, disease prevention, and pharmaceuticals (Primack, 2010, p. 81), to name only a few. These services often go unnoticed or are taken for granted, and thus habitat destruction is perpetuated for immediate and measurable economic gains. The anthropogenic effect on species extinction is undisputed within the scientific community. However, it is infrequently suggested that the livestock industry could be the root of this predicament.

In order to improve the livestock industry’s present position as a significant environmental liability, an extensive review of the food production methods would be required. This would involve a complete re-working of our food system, at both the level of consumer behaviors and methods of production. Governments would need to implement tougher regulations on emissions and pollution, as well as enforce accurate pricing in full consideration of water scarcity and exploitation of ecosystem services (FAO, 2006 p. 24). Consumers could initiate change by eating a more plant-based diet or selectively buying meat products from producers with a smaller environmental footprint. More sustainable methods of production, such as extensive pasture based farming, can only prosper if the over-consumption of meat and inflated demand begin to show a reverse.

The environmental impact of the livestock industry is unprecedented, as it contributes to dire environmental concerns. Authorities on the subject consider the industry to be among the top three contributors to global warming, the largest sectoral source of water pollution, and the leading cause of biodiversity loss through deforestation and land degradation. Despite the scale of this issue, it frequently goes under the radar of popular environmental concern, and is seldom in the spotlight of media. In order to alleviate this environmental burden on the Earth’s system, the livestock industry’s impact on the environment needs to be brought to the forefront of

public concern and translated, on the part consumers and policy makers, into meaningful actions designed to conserve the biosphere.

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# **Building Pressure: Buried Costs of the Northern Gateway Pipeline**

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## **ABSTRACT**

This is a researched analysis of the proposed benefits and likely consequences of the planned Northern Gateway Pipeline. The issue of the Northern Gateway Pipeline is examined through the use of peer-reviewed, third-party reports and supplemented by current events reported in the media. The result of this research analysis finds the project to be a far greater liability than a benefit to the people of Alberta and British Columbia. The promises of job creation by Enbridge account for a small minority of the population being employed for a relatively short duration of time. Furthermore, the wealth generated by the pipeline project is not equally distributed to the people of Alberta and British Columbia. Enbridge has also made unsupported claims to “sustainable communities” which amount to little more than large one-time payments to charities and other organizations across North America. Furthermore, some findings suggest health complications may develop in individuals employed in the oil industry. Ultimately, this report finds Northern Gateway Pipeline should be cancelled.

## **Introduction**

Pipelines are being heralded as the most efficient means for transporting crude oil across North America. The oil and gas industries behind these projects assure the public that the lines are safe. Politicians and business leaders praise the pipelines as an economic necessity. The public is largely unaware of the hidden costs and their responsibility to make their voices heard. Amidst the controversy both documents and pipelines have leaked to the surface, demanding a deeper exploration into the ongoing pipeline debate.

## **Background**

The proposed Northern Gateway Pipeline Project is nearing the final pre-construction stages. Enbridge, the corporation behind the proposal, was established 61 years ago under the names “Interprovincial Pipeline” and “Lake Head Pipeline.” Today, Enbridge is one of the largest energy transporters in North America. As set forth by Enbridge (2012, p. 3), the \$5.5 billion Northern Gateway Project consists of building 1,172 km of dual pipelines from Bruderheim, Alberta (northeast of Edmonton), to Kitimat, British Columbia (southeast of Prince Rupert). The primary line, which flows west to the Pacific Ocean, will be 36 inches in diameter and buried 36 inches below ground (Enbridge, 2012, p. 4). This primary line will transport 525,000 barrels of oil per day for international export; the secondary line will be 20 inches in diameter and will be used to transport 193,000 barrels of imported condensate east per day; condensate traveling east to Bruderheim will be used to thin heavier oil products for transport to the west coast (Enbridge, 2012, p. 4).

The complementary component to the pipeline is the Kitimat Marine Terminal. This terminal will have two mooring berths and is expected to have approximately 220 ship-calls per year. There will be 14 on-site storage containers for oil and condensate with the potential to build two additional storage tanks, and “all vessels [tankers] entering the Kitimat Marine Terminal will be modern and double hulled” (Enbridge, 2012, pp. 4-5).

There is still some debate over how serious the environmental impacts may be. However, it seems the risks associated with the Northern Gateway project far outweigh any perceived benefits. Federal officials flagged safety concerns about Enbridge’s proposed Northern Gateway pipeline project and warned multiple government departments including Natural Resources Canada, the Department of Fisheries and Oceans, Environment Canada, Transport Canada, and Aboriginal and Northern Affairs

Canada (De Souza, 2012, para. 2). The warnings specifically indicated that the “oil spill response plan along sensitive areas on its route from Alberta to the British Columbia coast was ‘insufficient’” (para. 1). A virtual representation of the pipeline route can be viewed online on the Enbridge website. The route runs adjacent to some rivers and lakes in northern British Columbia; it is conceivable that a leak in the pipe may compromise entire aquatic ecosystems. Humans can live without oil; however, they cannot live without water.

### **Questionable Benefits**

Support for this project is strong due in part to the extensive positive public relations campaign undertaken by the Province of Alberta and other major stakeholders, including Enbridge. Indeed, Prime Minister Stephen Harper has identified the pipeline as a national priority (Harper, 2012, para. 11). Evidence of this commitment to the oil and gas industry is presented in the federal government’s 2012 budget which has changed or repealed almost every major federal environmental law and numerous other laws that contained environmental provisions (Lemphers & Woynillwoicz, 2012, p. 14). As identified by the highly regarded scientific magazine, *nature*, “the conservative government of prime minister Stephen Harper intends to suppress sources of scientific data that would refute what they see as pro-industry and anti-environment policies” (*nature* Editorial, 2012, p. 72). Specifically this would entail the dismantling of the 24-year-old National Round Table on the Environment and the Economy (NRTEE), which provides advice on sustainable economic growth. Additionally, the government has substantially weakened key laws that require environmental assessments of development projects (*nature* Editorial, 2012, p. 72). The intent behind these revisions was to remove any barriers to economic development; this seems contradictory to the best interests of Canadians who have already seen a rise in inflation and economic disparity as a result of oil sands development (Lemphers & Woynillwoicz, 2012, p. 10).

The institutions and people who have endorsed this pipeline, specifically Enbridge, the Province of Alberta, and the federal government, along with ‘The Northern Gateway Alliance’ (Northern Gateway Alliance Leaders, 2012), comprised of prominent business leaders—including the current president and CEO of the B.C. Chamber of Commerce—suggest that the oil and gas industry must be encouraged to expand for the economy to prosper. In order to put this claim into perspective, the total real gross domestic product (GDP) for the oil and gas industry must be observed. As documented by the Pembina Institute, an organization that has provided leadership in policy research and education on climate change, energy issues, green economics, energy efficiency, conservation, renewable energy, and environmental governance for the past 20 years, the

GDP for the national oil and gas industry as a whole (including the oil sands) was \$51 billion in 2010 (Lemphers & Woynillwoicz, 2012, p. 19). More importantly, this \$51 billion accounted for 4% of the total Canadian GDP—the manufacturing sector was credited with 12% (Lemphers & Woynillwoicz, 2012, p. 19). It would appear as though the oil industry is not the beacon of economic success that it claims to be.

More attention should also be drawn to the statistics used by Enbridge to describe the purported job creation of this project: 4,100 person-years on-site and 31,000 person-years off-site in British Columbia, and 1,400 person-years on-site and 13,700 person-years off-site in Alberta (Enbridge, 2012, p. 9). Closer examination of these statistics suggests that the equivalent of only 4,100 people in British Columbia and 1,400 people in Alberta would be employed on-site for one year. This is not a significant contribution to job creation when the population of B.C. and Alberta is 4,606,000 (BC Stats, 2012) and 3,645,257, respectively (Hansen, 2012, p. 1).

It is therefore worth noting that Pembina Institute has also observed that the oil industry is highly subsidized by the taxpayers, with an estimated tax forfeiture of \$583 million (from 1996 to 2002) for oil sands development (Taylor, Bramley, & Winfield, 2005, p. 37). If these same taxation incentives were extended to alternative energy sectors, specifically wind, biomass energy (burning organic matter to generate electricity) and retrofits, then our economic prosperity would not be dependent upon a finite resource in a volatile market. Alberta Finance Minister Ronald Liepert announced the province will post a deficit of \$886 million in the 2012 fiscal year compared with a \$1.3 billion deficit in the previous year; the projected budget deficit is based on lower than anticipated economic growth and crude oil prices as determined by the international market (Van Loon, 2012). The international demand for oil has been reduced in accordance with the on going global recession, and as a result the provincial budget, which is largely dependent on oil sales, is left with insufficient revenue to fully fund provincial programs and services.

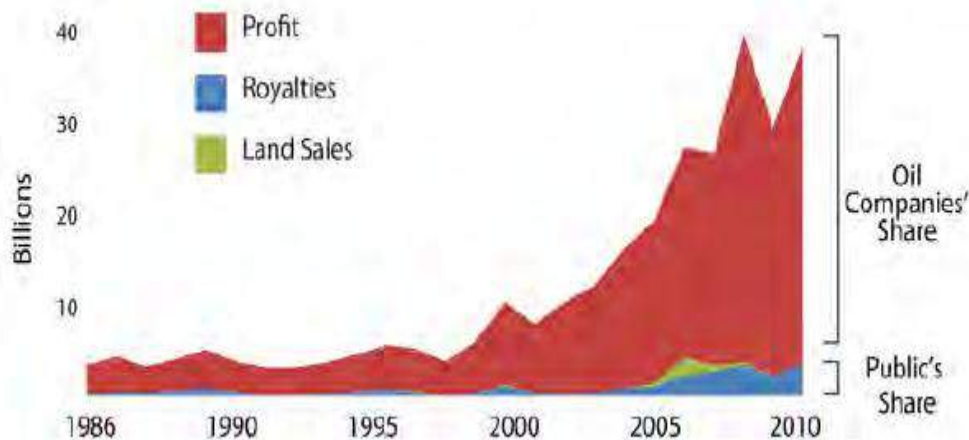
Moreover, Alberta is using finite, non-renewable resources to power the further extraction of finite, non-renewable resources. Currently 74% of Alberta's electricity is generated in coal-burning power plants; of this, almost two thirds of the energy available in the coal is lost out the smoke stack (Weis & Bell, 2009, p. 2). Weis and Bell also point out that the technology to capture the additional energy normally lost through heat is available and installed in many other countries. Still, Alberta has the potential to transition away from coal-burning power plants in the next 25 years. "If Albertans set their sights higher, the province could generate so much energy from renewable and

transitional technologies that it could begin to phase out existing coal generation [by 2028]” (Weis & Bell, 2009, p. 3).

Furthermore, in 2008, the Organization for Economic Cooperation and Development (OECD) noted that oil sands development is generating “large regional disparities,” which are outside of the corrective measures offered by the historic system of equalization between the have and have-not provinces (Lemphers & Woynillwoicz, 2012, p. 10). While the oil industry can be a highly lucrative investment, the wealth is by no means equally distributed back to the people. According to a report released by the Parkland Institute, a non-partisan, research organization based out of the University of Alberta:

Since 1986, more than \$285 billion worth of bitumen and synthetic crude oil have been produced from the tar sands. From those resources the oil companies have netted approximately \$260 billion dollars in pre-tax profits, while the public has received less than \$25 billion in return (see figure 1). That means roughly 6% of the total value extracted from the tar sands has gone to the public through royalties and land sales. (Campanella, 2012, p. 7)

FIGURE 1 | Distribution of Tar Sands Revenue (\$2010)



Source: Calculations based on data retrieved from CAPP, Statistical Handbook, November 2011.

The Northern Gateway Pipeline project favours the minority over the majority. Alberta features “a royalty regime that ensures the vast majority of wealth goes to the private oil companies rather than the public, the owners of the bitumen” (Campanella,



2012, p. 5). A privileged few will profit while the rest of the population will be left to deal with the environmental degradation, high cost of living, and social problems caused by rapid and temporary industrial development. As asserted by Steinhauer (2008, para. 12), workers in the oil and construction industries may be financially better off, but many others are not; skyrocketing rent and housing prices force many of Alberta's working poor to hold several jobs just to have a place to live—they are in fact in a poorer position now than they were before the boom. The wage gap between genders is also amplified in a boom/bust, resource-based economy. As noted by the Parkland Institute:

As opposed to women in most other provinces, in Alberta the wage gap actually increases for women over 44 years of age. In 2009, women in Alberta aged 44 and over earned only 67% of their male counterparts, a ratio far below the national average of 80%. During Alberta's most recent boom, men saw an increase in their median income of 32%, while working women of the same age only saw their median incomes increase by 18%. (2012, para. 4-5)

New research is also revealing that “oil and chemical workers have been shown to experience occupational illness, chemical sensitivity disorder, and greater cancer risk from chronic inhalation of petroleum hydrocarbons and exposure to benzene” (Widener, 2009, p. 33). This new research linking a range of occupational illnesses with the oil industry calls into question what benefits increased oil production offer the people of Alberta and British Columbia and suggests previously unknown harms.

Perhaps the most ironic and contradictory statement offered in support of the Northern Gateway Project is that it will contribute to “sustainable communities” (Enbridge, 2012, p. 8). In 2010, Enbridge claims to have invested \$10 million in charity, non-profit, and community organizations (Enbridge, 2012, p. 8). By its very nature, a one-time donation to charitable organizations across North America is highly unsustainable and seems to be a part of the public relations campaign to get the pipeline approved. This type of contribution suggests that Enbridge is seeking substantial profits not sustainable communities. However, if charities and non-profits implement new outreach programs based on the single donation received from Enbridge, it would create a dependency on future donations. A large one-time donation is good mainly for short-term projects. Annual operating grants are far better for creating sustainable communities.

### **Cumulative Consequences**

Safeguarding our natural environment safeguards our future. The proposed pipeline has debatable short-term benefits which do not outweigh the many risks associated with

the oil industry. Environmental disasters have happened in the past; they can happen again. The 2010 Gulf oil spill is still a recent memory in which criminal charges were laid against a senior British Petroleum drilling engineer for misleading the government and the public over how much oil was leaking from the offshore well (Rudolf, 2012, para. 1, 6); the 1989 Exxon Valdez spill has had lasting ramifications, and there continues to be a tragic abundance of relatively small, largely unreported leaks from pipelines and oil tankers all around the world. In Alberta alone there were two major pipeline ruptures in June 2012; the first resulted in 475,000 litres of oil being leaked from a Plains Midstream Canada line, while the second leak, in a pipeline operated by Enbridge, occurred because of a failed gasket and contaminated the nearby area with 230,000 litres of oil (Canadian Press, 2012, para. 1, 4, 13).

In the case of the Northern Gateway Pipeline, sections of pipe would be welded together by hand or through automation. These sections of high-pressure pipe would then be buried three feet below ground (Enbridge, 2012, p. 4). Any seismic activity or impact from above, such as falling trees or rocks, could rupture the line. “The pipeline would follow the Morice River up into the Coast Mountains, cross the headwaters of the Zymoetz River, and then follow the Kitimat River down to the coastal town of Kitimat. The geology of this area is complex, and destructive landslides are common” (Swift, Lemphers, Casey-Lefkowitz, Terhune, & Droitsch, 2011, p. 3). And, as stated previously, the safeguards in place are reportedly not sufficient (De Souza, 2012, para. 1). A drop in pressure may be the only indication that a leak has occurred in the line unless the oil is visually evident in the surrounding area. Assuming a leak is caught early, the oil will still drain back to the nearest valve shut-off, which could be several kilometres away—recall, the pipeline would be 1,172km. Recognizing where the oil comes from, the environmental degradation in Alberta would be accelerated as oil extraction is increased to meet international demand for Canadian oil exports.

## **Conclusion**

Perhaps exposing the misconceptions surrounding the Northern Gateway Pipeline project will be enough to stop it. Even Thomas Mulcair, NDP Leader of the Official Opposition, has stated publically that the Northern Gateway pipeline should be cancelled, period (Braid, 2012, para. 1). The economic benefits we supposedly stand to gain will have a marginal trickle-down effect for most people and only for a short period of time—while the working poor are destined to suffer even more. The wealth generated by the Northern Gateway Pipeline project will be concentrated in the hands of the few individuals employed in the oil and gas industry and even those ‘privileged’ individuals working in the industry are at risk for chronic disease from chemical exposure. Realizing

we will not receive the monetary gain, we must ask ourselves if we should allow a corporation to place our environment at risk for the sake of their own private profit.

There are always alternatives. We can phase out our economic dependency on the oil industry with an alternative economic basis (e.g. wind, biomass, retrofits, etc.), which would only need comparable tax incentives to what the oil industry has already been receiving for years. We can begin the transition to alternative lifestyles that are truly sustainable and that will allow us to realize a better quality of life for all generations—not just our own. Our decision should focus on the environment which holds a common value that we all benefit from. The answer should be obvious. No pipeline.

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# Chasing Rabbits: Understanding “Urbanized”

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## ABSTRACT

Poetry can be a voice for concerns about conservation and urbanization’s effects on habitat and animals, whether domestic or wild, as well as an inspiration for researching local urbanization. The concept of poetry as an expression of perspective and feeling about our ever-changing environment that is continuously losing its natural state is shared within this article.

## Urbanized

Then:

Deteriorating house, one-  
story? white chipped siding, farther  
back on the lot; gusty, strawberry-scented  
fields, hip-long sun-warmed grass; hundreds  
of soft, white rabbits— a colony  
adopting the land— started: one pair, grew  
to hundreds of those gentle, white rabbits.

***Now:***

Modern grey building, sun-warmed concrete? The harsh smell of asphalt, paved parking lot, no fields, vehicles replace rabbits, prickly manicured grass.

What of those white rabbits?

**As I Remember It**

In high school, I had a close friend named Laura. She knew I was an animal lover. I would frequently drive around with her and her current boyfriend Scott, and one day she told me of an abandoned house by a Ford dealership between Edmonton and St. Albert that had been claimed by rabbits.

Laura and Scott showed me this place of rabbits. Scott parked on 156<sup>th</sup> Street, beside the lot and across from the Ford dealership. After sitting in the vehicle for a little while, we spotted some white rabbits hiding in the tall grass around the old, abandoned one-level house. Laura's theory was that rabbits had inhabited the home and then they continued to multiply and grow when the owners had moved on from the property. My thoughts and observations of this recount are that the rabbits are one with nature, and nature had decided to take back its land.

Years later, when my mom and I were driving down St. Albert Trail into Edmonton, I was reminded of the lot with its rabbits and I noticed that the abandoned house had been torn down. The rabbits sprung back into my mind, along with the question: "what of those white rabbits?"

**The Question**

This question festered in my mind for quite some time, and the question sprouted more questions. Did anybody care what happened to the white rabbits? Why do we shove our wildlife further outside the city and replace habitat with similar, already existing business or with highways that create more traffic? The redevelopment of this

lot reminded me of the Anthony Henday highway that was being built between St. Albert and Edmonton, and of how there used to be fields with horses and deer and coyotes and bird nests and homes for wildlife where now there is only stretches of concrete.

What of the animals that lose their home to our urbanization? And so the question— “what of those white rabbits?”—dwelled in me for so long that I felt the need to write about the situation to try to evoke my own questioning into others.

### **The Method**

When something burdens me for so long, I often struggle with wrapping my mind around what exactly I want to say. In the case of “Urbanized,” I wasn’t sure what I wanted to say or why. I just knew I was bothered by the disappearance of the house and its residing rabbits, and I wanted to encapsulate my being bothered. When unsure of what or how to say something, I often move towards poetry because it allows me to express thoughts without restriction. I have previously described poetry as dancing: it is something that is felt; it is expressing feelings and emotions. Dancing is a natural movement that occurs when music and body are one: with “Urbanized” my mind was one with my pen and the words released from me naturally.

The only thing planned for in “Urbanized” was the structure. I wanted to contrast the before and after, natural versus human-made, animal versus human. The best way for me to do this was to show what I was continuously visualizing, which, in sum, was the before and the after, the loss of nature.

When reading “Urbanized,” it must be taken into account that there were no strawberry-scented fields; perhaps the house was not white and the new building is not grey. Perhaps the rabbits aren’t wild but are indeed domesticated, and maybe there were some fields remaining on the lot after the house had been removed. These details and adjustments were added for poetic emphasis and visual contrast. The point is that this place was once home to rabbits and their home was taken away. Where have all the rabbits gone? Why are our desires for buildings, businesses and transport so often prioritized over habitat and wildlife? Is habitat and wildlife considered when an area is chosen for urbanization?

“Urbanized” is a qualitative poem that centralizes around comparing before and after. Hence, I was not focusing on fact when writing. I was focusing on what the property represents to me—a loss of nature.

## The Result

My reason for writing “Urbanized” was to unburden my troubled mind and also to try to evoke the same feeling in other people. The goal of the poem is for readers to care about the rabbits, to wonder about their whereabouts, to feel the loss of land. Also, I aimed for the lot to be remembered as a home for rabbits during a less urbanized period of time. Most importantly, I hope that “Urbanized” will be an example of what happens on a daily basis because every day we are losing nature to urbanization.

## The History

Discovering the rabbits’ history was a journey. I felt overwhelmed when advised to learn the background of the property, and especially when and how the rabbits came to be a colony that recently diminished.

To begin, I tried to contact my old friend, Laura, without success. Then I attempted to research the property. I waited to find out what the new building was going to be (signs were soon posted identifying the *Christ City* project), and then I tried searching the site via the Province of Alberta Land Titles online to no avail. So I ventured to the property of the new building with the intention of speaking with some workers. All of these pursuits led me to a wall.

I had one other lead to follow. This lead was City Ford Sales, which is located across the street from *Christ City*. I hoped there would be someone who had worked there long enough to remember the previous property and the rabbits it fostered. After all, there had been hundreds of rabbits— someone must have noticed and remember them. So my friend and I went across the street to inquire about the property and the rabbits, and from there the journey proceeded.

Upon walking up to the building, a friendly salesperson approached my friend and I to ask if we were interested in trading my friend’s Ford. We laughed and I explained that I was a student from Grant MacEwan University, and that I was researching the property across from the dealership and was hoping someone could answer a few questions for me. He seemed to perk up, telling us to follow him. We entered the building and soon spoke to a secretary who recalled an old farmhouse on the property before the *Christ City* Church project had begun about a year ago. She also knew of the rabbits, and the salesperson and secretary laughed over how the rabbits who came over to the dealership took over in their own way.



While speaking with the secretary, my friend noticed someone she knew in the dealership and began speaking with him. The salesperson mentioned that I might want to speak to this person as well because he had been around the company for a while. This person was Chris Goodwin, who is an auto detailer and whose father is manager at City Ford Sales. Once we began talking, he explained that the rabbits came from the former farmhouse across the street, and that they have a little house behind the building where people feed them. I was instantly intrigued by this, and asked to see the house.



Chris eagerly agreed to show us the house, and on the way I learned that the rabbits had been around for approximately twenty years. We walked up to two water tanks set side-by-side. Chris explained that someone from Ron Hodgson (another dealership that is located beside City Ford Sales) had brought the tanks for the rabbits to make home in. While explaining that many people bring feed for the rabbits, a van pulled up. A couple stepped from the van, opened up the trunk and started bringing out trays of feed. Chris suggested I speak with them, as they were some of the people who fed the rabbits.

The woman, Marilyn Tkachuk, was warm and welcoming as we began chatting. She explained that her and her spouse drop off seven trays per day of vegetables, fruit, rabbit pellets and pita bread to name a few, which normally takes about 45 minutes. They have made this a daily routine for the past six years. She originally learned of the rabbits via watching TV, and Chris verified this by recalling that City Ford Sales used to advertise the rabbits. When Marilyn first learned of the rabbits she visited the location to see them, and from there her and her husband began buying food to bring for the rabbits until the couple eventually found a supplier to provide leftover food. She also explained that the rabbits are territorial and have their own groups. These groups use specific

feeding trays so the rabbits aren't necessarily a colony but rather a community of individual family units.



During our conversation, I also learned that most of the rabbits were not wild white rabbits or hares like I recalled. Instead, the majority of them were domesticated lopped-eared black, brown, grey and white rabbits. I learned that even though the rabbits often cross 156<sup>th</sup> street (a very busy roadway), they are rarely hit. She mentioned that people had dropped the pets off there over the years and that there had been hundreds, but that number had reduced in the past year (predators are suspected to be the cause). She explained that this seemed like it might be a natural population cycle though as the rabbits had been reduced to approximately five in one year, yet their numbers increased again after their breeding period.

Around this point, I inquired again about how the rabbits had originated. Apparently the owner of the former farmhouse had also owned rabbits and let them roam freely. Their numbers multiplied over time, and when the owner left the house, he left the rabbits with it. They continued to multiply and eventually took over the abandoned property.

I asked Chris about the boundaries of the property and when it was sold, finding that the province had actually bought the property with *Christ City* Church only owning a small portion of the land in that area. Anthony Henday highway would consume the rest

of the area. He also mentioned that the province offered, multiple times, to purchase the property from the landowners, and specifically the farmhouse owner, before the offer was accepted. Originally, the owners did not want to sell but they eventually gave in to what seemed to be either persistence or “the right price” or both. Apparently, the province moved a house for the owner who used to live beside the former farmhouse when they finally accepted the province’s offer.

And so, at the end of my journey through the history of the property I learned that the rabbits are still around. People feed them. People do care about them. Though there is still the impending Anthony Henday highway, and, in my opinion, its development is a threat to these rabbits and the other wildlife that live on the land that is being urbanized.



## Conclusion

Though I found some discrepancies between how I remembered the rabbits and their home versus the history that I learned, I still feel my poem is relevant. Even if the rabbits are domesticated, they are still animals, and there are other animals in the area that are also losing their home and habitat to the construction of the Anthony Henday highway. The construction of this highway and the *Christ City* church represent urbanization. The animals living in this area lose a large portion of their habitat because

of the construction of this highway, and the scope of fields and natural area continues reducing, narrowing and closing-in as urbanization continues.

Merriam Webster's definition of urbanize is "to impart an urban way of life to <urbanize migrants from rural areas>." One consideration I have is that the habitat of wildlife and animals is not necessarily being lost but rather the nature of their home changes, and therefore adaption and a new form of survival is forced upon the animals living within an area when urbanization occurs. The influence on lifestyle of such wildlife because of urbanization needs to be considered.

Continued urbanization requires more people like Marilyn and Chris who remember, care and think about these animals. "Urbanized" is meant to evoke such imagining, reminiscing, and caring in its readers. Most importantly it is meant to evoke considerations of our land and how we affect it when we use and alter it. In the words of Steve Irwin, "I believe our biggest issue is the same biggest issue that the whole world is facing, and that's habitat destruction," (as cited in saichp1, 2007). Furthermore, I believe poetry can be a tool for expressing the need for conservation and how urbanization jeopardizes conservation and the well-being of animals when prioritized.



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*\*Writer and Photographer: Melissa Cloutier is a fourth year student in the Bachelor of Applied Communications in Professional Writing program. She has a passion for writing, photography, and the environment.*

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# David Suzuki: Voice of the Environment

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## ABSTRACT

Consuming endlessly, accumulating waste and ignoring the fragile environment are common trends in today's world. A speaker for the environment, Dr. David Suzuki is aware of the environmental crisis. Suzuki, with honours in Biology and a Ph.D. in Zoology, has been active in promoting environmental conservation through his show *The Nature of Things*, his work as a professor, his public speaking around the world, and his charity, the David Suzuki Foundation. The foundation deals with environmental issues, including climate change, health, oceans, wildlife, habitat preservation, and freshwater conservation. The foundation has created programs and projects to challenge the everyday life of individuals. One project, the Nature Challenge, encourages individuals to be greener in their everyday life. Another project is a mission to achieve sustainability in Canada by 2030, called SWAG – Sustainability Within a Generation. Demanding immediate action on the environmental issues of today, Suzuki uses science and facts when he speaks for the Earth. Suzuki provides Canadians with easy ways to help save the environment, showing that environmental conservation can be practiced by all.

A common trend in today's fast-paced society is to consume endlessly and accumulate waste without acknowledging the impact of these reckless actions on the fragile environment. In the face of constant, human-made destruction, who speaks for the earth, our home and resource, which allows us to continue our consumerist lifestyles?

Dr. David Suzuki recognizes the environmental crisis and has taken the following position: “Nature is the ultimate source of our water and electricity, and nature absorbs our waste. But in our globalized world, we believe the economy takes precedence over nature... but the economy is a human invention, while nature is what all life depends on” (Suzuki & Moola, 2008, para. 8). Environmentalist, geneticist, broadcaster, and all-around conservationist, Dr. David Suzuki is a Canadian born nature enthusiast, directing the world’s attention to the environment and the damage incurred by the world’s population that now exceeds seven billion humans.

Born in 1936 in Vancouver, Canada, Suzuki, a Japanese Canadian, was only six when his family was forced to move into an internment camp during the Second World War. Having lost everything following the war, his family relocated to Kaslo, a small town on Kootenay Lake. Suzuki spent most of his time in the Kootenay valley exploring and learning about different plant species (Suzuki, 2006, p. 22). After much movement, the family finally settled in London, Ontario. In his book, *David Suzuki: the Autobiography*, Suzuki (2006) used the word “nerdiness” to describe himself, stating that his “main solace was a large swamp” close to his house: “Any marsh or wetland is a magical place, filled with mystery and an incredible variety of plant and animal life. I was an animal guy and insects were my fascination” (p. 31). His compassion and ability to influence and inspire others became quickly evident when he was voted school president in his final year of high school. Suzuki’s childhood influenced him to speak up: “being considered less than worthy of being considered a Canadian shaped the way I am, it left me with a lifelong need to do things to prove to Canadians that they made a mistake, that we are worthwhile people” (p. 22).

Expanding on his childhood love of nature and biology, Suzuki graduated from Amherst College in 1958 with an Honours BA in Biology, which soon followed with a Ph.D. in Zoology from the University of Chicago in 1961. Suzuki began his professional career as an Assistant Professor in genetics at the University of Alberta in 1962, shortly before becoming a faculty member of the University of British Columbia in 1963 where he has remained ever since (Suzuki, 2006, p. 47).

Early into his career, Suzuki demonstrated a gift for public speaking, and he soon began speaking to audiences and appearing on television shows. In *Forces of Nature: The David Suzuki Movie*, Suzuki admitted he “always felt that television was a fantastic medium whereby the area of science could be explained to the public on a very large scale.... science is too important to be left in the hands of scientists or industrialists or politicians” (2010). In 1969 Suzuki broadcasted his first television series called *Suzuki on Science*. With his “unique ability to talk about science in lay terms” (Corcelli, 2005, para.

1), Suzuki excelled at expanding on the topics covered in his show and attracted great popularity as a result. A radio show, *Quirks and Quarks*, and another television series, *Science Magazine*, preceded his commitment to the show *The Nature of Things* (Corcelli, 2005, para. 1). From AIDS and global warming to entomology and zoology, *The Nature of Things* explores it all and touches on a vast variety of highly controversial subjects, helping to educate and inform Canadians about science and the environment (Canadian Broadcasting Corporation, n.d., paras. 6-7). His motivation to continue speaking for the earth has changed over time and having grandchildren has made Suzuki strive for a healthier environment and a better world: “I’m really compelled by my grandchildren. When I look at my youngest grandchild and see the enormous potential in his life, but realize the constraints that the environmental decline will impinge on him, I grieve for that” (Martin, 2010, para. 4).

Suzuki has won numerous awards, including the Distinguished Canadian Award, Companion to the Order of Canada, Global Citizen United Nations Association of Canada, and 5<sup>th</sup> spot as the Greatest Canadian. Along with his professional work, Suzuki has written many blogs, published over 300 articles, authored 52 books, and spoken at numerous conferences and interviews (“Dr. David Suzuki: Detailed CV,” n.d., pp. 2-17).

Notably one of Suzuki’s largest achievements is the creation of the David Suzuki Foundation (DSF), which was founded on September 14, 1990. The foundation came from the ideas of Suzuki and his wife, Dr. Tera Cullis, after they were faced with questions and pleas for help from all over the globe. People wanted a “solutions-based organization,” one that could deal with current environmental issues (Cullis, 2011, para. 2). The scope of many of these issues was too great for the two of them alone, so after discussing their ideas with other environmentalists, the foundation was established as an environmental group that would “be based on the best scientific information... to get to the root causes of destructiveness to seek real alternatives and solutions” in the hopes to get onto a truly sustainable path” (TckTckTck, 2011, para. 4).

The foundation was set up to be a credible organization that governments and corporations could seek for advice, a tool for educating on environmental issues, and a source of information on ways to help save the environment. To maintain credibility, the foundation decided “not to accept government grants or support” (Suzuki, 2006, p. 221); governments often change their priorities and the foundation did not want to compromise its beliefs and values (Suzuki, 2006, p. 221). In 1992, Suzuki and Cullis attended the Rio Earth Summit, using the work of others around the world to develop the “Declaration of interdependence,” a guiding principle to steer the foundation (Suzuki, 2006, pp. 274-277; David Suzuki Foundation, 1992, para. 1).



Since its creation, the foundation has been challenged with many detrimental issues relating to the environment such as climate change, human health, oceans, wildlife and habitat, and freshwater conservation. Initial projects were international, because money could go much further overseas. The foundation worked with the Ainu of Japan to protect salmon, indigenous people of Columbia, and the Kayapo people of Brazil. Projects took Suzuki and other foundation members to Australia for research on a dam project and to Vancouver Island where they worked with the Hesquiat people to restore a clam fishery. Partnering with local people during projects encouraged alternative models of development for economies and communities and allowed the foundation not only to educate and solve issues, as well as to continue to conserve resources (David Suzuki Foundation, n.d.c, para. 4).

Foundation sponsorship and donors enabled DSF to begin work in Canada. Publishing books and partnering with groups to work on projects, the foundation worked on a Musqueam Watershed Restoration project and restored health to the last salmon stream in Vancouver with the Pacific Salmon Forests Project. The foundation published landmark guidelines for logging and annual report cards on Canadian rain forests and pushed for clean air, publishing energy solutions and successfully lobbying Canada to sign the Kyoto Accord. DSF has worked with the government to support renewable energy and carbon tax while protecting species at risk, fighting for pesticide bans, helping chefs switch to sustainable seafood, and educating businesses on how they can decrease their environmental impact by reassessing current methods and techniques in the agriculture and business sectors (David Suzuki Foundation, n.d.c, para. 4-11; Suzuki, 2011, pp. 205, 232-237, 246).

Two outstanding projects of the DSF have challenged the everyday life of individuals. The Nature Challenge was created to encourage individuals to make a difference in their everyday life by following seven easy-to-follow guidelines: 1) reduce home energy use by 10 percent; 2) choose energy efficient home appliances; 3) replace pesticide use with clean alternatives; 4) buy locally grown and produced food; 5) choose a fuel efficient vehicle; 6) use green transportation (walk, bike, carpool, bus) once a week; and 7) learn and share information with others (Suzuki, 2006, p. 262; Pazderka, Rowan, & Tamm, 2003, pp. 6-16).

The mandate and mission of Sustainability Within a Generation (SWAG) are to achieve sustainability in Canada by 2030. To determine how to achieve sustainability, DSF divided society's needs into nine areas: generating genuine wealth; improving energy efficiency and resource use; shifting to clean energy; reducing waste and pollution; protecting and conserving water; producing healthy food; conserving,

protecting and restoring Canadian nature; building sustainable cities; and promoting global sustainability (Suzuki, 2006, p. 264; Boyd, 2004, p. 2). Not only are these goals realistic, but the DSF website provides ways that each of the points can be met efficiently and effectively (David Suzuki Foundation, n.d.e, para. 1).

Suzuki has inspired the hearts and minds of thousands of people across the nation, worked with large corporations and governments on large-scale environmental initiatives, and instilled in people a sense of responsibility for nature. Although there is a multitude of support sent Suzuki's way and despite the evident impact that he has made in the scientific community, he continues to be critiqued by others. Chairman of the Natural Resources Stewardship Project, Ball (2007) referred to Suzuki as "a bully intolerant of scientists who don't see things his way" (para. 1). Others have stated that he "lies in public" (MacRae, 2000, para. 49).

While individuals have stated opinions and disagreed with his work, Suzuki has explained that he has "been attacked by the forest industry, the chemical industry, the fossil fuel industry, and the pharmaceutical industry because [he] was always raising issues that the industries [didn't] like having discussed". Suzuki faced much criticism from the public when he praised the Ontario Premier's green initiatives in a video that was placed on the Liberal Party website. Gregory Thomas of the Canadian Taxpayers Federation expressed concern about Suzuki's close ties to DSF and his endorsement of Premier McGuinty: "If David Suzuki wants to be a political activist, that's what he should do, and not call himself a charity" (Davidson, 2011, para. 10). As the credibility of DSF deteriorated, Suzuki defended the foundation by announcing "[his] personal opinion has nothing to do with [his] foundation.... I try very, very hard not to be partisan, but I still will criticize government for policy. I think that's the right of all people" (Alter, 2007, para. 5). Despite criticism, Suzuki remains focused on his values: "We have to reflect on how we arrived at this moment, search for the root causes of the problems so we can find ways to avoid danger and discover new solutions that are truly sustainable" (*Forces of Nature: The David Suzuki Movie*, 2010).

Although Suzuki deals with everything to do with the environment, one of his most active roles is in the area of climate change. The DSF described climate change as the result of alterations to long-term weather patterns through human activity. Global warming is a rise in the average global temperature and is just one of the conditions of climate change. As carbon dioxide increases due to the combustion of fossil fuels, carbon gets trapped increasing the density of the atmosphere, causing a 32 percent rise of carbon dioxide since the Industrial Revolution (David Suzuki Foundation, n.d.d, para. 3-6).

One of the most serious impacts of climate change is its effect on water resources around the world. The World Water Council (2010) stated in a report that currently more than one out of every six people in the world lack access to safe drinking water (para. 2). Water is already in short supply as a resource and “tied to many other resources and social issues such as food supply, health, industry, transportation and ecosystem integrity” (David Suzuki Foundation, n.d.b, para. 3). There has been an increase in precipitation that can prevent crops from germinating on time, which can lead to a worldwide food shortage. Suzuki argued that things will not get better on their own:

I feel, in many ways, that the scientific community is failing miserably, when you think that over 20 years ago the leading scientists in the USA were saying global warming is real, human beings are a major part of it, we have to act now.... the issues are dealt with in too superficial a way and we are not taking science seriously.

As a majority of the world starts to realize the validity of his concerns, Suzuki has made plans urging people to be more energy conscious and calling for Canada to develop a national energy plan. Technological advances put green energy sources to the test, and wind and solar energy are the fastest growing renewable energy sources in the world. Clean, sustainable energy does more than just reduce the risk of climate change; it also brings jobs, investment income, and competitive edge (David Suzuki Foundation, n.d.a, para. 3).

Even though he has been a forceful speaker on climate change and sustainable energy resources, Suzuki suggested that many people remain unconvinced:

The issue of climate change is still controversial, even though the vast majority of climatologists are saying climate change is occurring and we have to do something about it, there is handful of people, most paid for by the fossil fuel industry that are saying no, but in the name of balance we take one rep from the huge group saying yes and one from the tiny group saying no and act that it is a controversy, but really it isn't.

There are three different categories of feelings towards climate change: 1) the people who believe it exists and want to change; 2) those who believe it exists but do not consider it serious; and 3) those who believe climate change is just due to “natural cycles” (Ball, 2007, para. 1).

Suzuki speaks to science and facts when he speaks for the earth. He speaks without ageism, sexism or racial biases; he speaks simply to educate and provide ideas to create a sustainable and healthy world. Through children's books and school presentations, he finds ways to communicate with even small children to teach and inspire: "adults don't want to change, children haven't invested time or effort into the status quo. They're completely open" (Bradley-St-Cyr, 1995, para. 11-12).

Suzuki uses realistic goals and provides realistic means of achieving these goals—simple everyday tasks that could make a large difference in the environment (David Suzuki Foundation, n.d.e, para. 1). His foundation outlines idea after idea of practical ways that individuals can change in their own lives, as well as ways that businesses and even nations can decrease their impact on the environment, benefiting the health of the environment and human populations.

Environmental problems are here, they are real, and it is time for humans to take action. Suzuki provides us with easy ways to help save our environment. He is influential, honest, and his knowledge about science has sparked in Canadians an interest in the environment: "I have no illusions that I am so important that I can turn everything around, I have no illusions that my foundation is going to make that huge difference, but I believe if millions of people like me and thousands of organizations like mine are all doing their small part we can become an irresistible force" (David Suzuki Foundation, n.d). Dr. David Suzuki speaks for our earth; will you?

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# Ethical Considerations in Primate Conservation

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## ABSTRACT

Primate conservation is often complicated by the presence of human communities competing for shared resources. Considering the finite nature of these resources, this cohabitation can lead to a dilemma wherein a particular community (either non-human primate or human) grows to the detriment of the other. Immediately, this dilemma may be addressed from either an anthropocentric or a non-anthropocentric perspective. The former demands we prioritize our own kind, forgoing non-human primate conservation unless it is also able to benefit human communities. Alternatively, primate conservation can be approached non-anthropocentrically through initiatives that seek to extend basic human rights to the great ape family. Such “live-and-let-live” programs are difficult to enforce and often face scrutiny and scepticism by nearby human communities. While including local communities as agents of conservation may appear to solve the dilemma, such approaches are derived from a cost-benefit system where conservation agendas are upheld only as long as they benefit the local people executing them. This prioritization is potentially solvable by a deeper ecological understanding of both human and non-human primates and their reciprocal relationship. Such a profound change, however, will require long-term, sustained effort and fails to improve primate conservation adequately in the short term. Thus, primate conservation will continue to balance and reconcile the needs of both human and primate communities as our understanding of this delicate relationship continues to build.

Approximately half of the world's primates are endangered (Riley, 2010, p. 235), a statistic we have become accustomed to hearing on sensationalized television specials. The irony of the primates' situation is in the advertisements interrupting these documentaries that showcase starving orphans and impoverished villages. The nonhuman primate also struggles: lacking water, arable land, and the economic means to survive, nearby human populations are also at risk. Both populations make their homes on the same land and require many of the same resources. Additionally, each of the cohabiting populations often develops to the detriment of the other (Treves et al, 2006, p. 383). Given the finite ecological space and resources, there is competition between the two for domination of an area, and our resources to aid either population are inherently limited. Thus, a decision to help one population is often a decision to indirectly harm the other. The limits in our, and the environment's, resources create a moral dilemma when it comes to the conservation of primates and nearby humans: which group is to receive priority?

There are two opposing camps in primate conservation. The first implores that we prioritize our own kind; this anthropocentric view dictates that until humans can successfully manage their own communities, resources should focus fully on that cause (Hill, 2002, p.1148; Lovett & Marshall, 2006, p. 114). Such a human-centric perspective can be justified through an evolutionary framework.

The Darwinian understanding of ecology dictates that an action is best if it increases the reproductive potential of an individual. Failing this, the next best strategy is one that benefits that individual's group, population, or species (Strier, 2011, pp. 96-97). Nowhere in the ecological struggle for survival is there a rule about defending a foreign species unless such an action would directly benefit the decision-making individual. Given that primate conservation often compromises surrounding human communities by limiting their resources (Treves et al, 2006, p. 383), it is unrealistic to expect nearby human populations to defend primates. Likewise, it is ecologically unsound to focus our aid on protecting primate livelihoods when members of our own species struggle.

By focusing aid efforts on humans and prioritizing human livelihoods over conservation goals, anthropocentric ethics on primate conservation indirectly advocate that primate livelihoods are less important than our own. This perspective holds that until we are able to manage our own communities, available resources should be allocated to this cause. Efforts to conserve primates would only be made under this framework if preserving the primates could benefit humans, either directly or indirectly (Rose, 2011, p. 246). Conservation efforts are thus framed through the human perspective.



One anthropocentric justification for the conservation of primates is biophilia, the human love for and fascination with living beings. Human biophilia is an innate quality that is stronger for creatures that bear a resemblance to us. Being humanoid in appearance and our closest living relatives genetically, primates become instant “bestsellers” in this regard, (Rose, 2011, pp. 247-248). Anthropocentric discourse on conservation focuses on biophilia and the similarities between humans and primates. For example, parallels can be drawn between human and primate hands, concluding that primates are as we are and thus deserve our protection.

In contrast, the issue of primate conservation can be approached from a non-anthropocentric, ecological point of view. This view does not prioritize humans, but neither does it prioritize primates. In essence, these ethics assign equal rights to both populations as individuals; attempting to draw attention to the status of primates as beings with equal moral rights stands as a goal in and of itself (Lovett & Marshall, 2006, p. 114). Several associations (the Great Ape Project being perhaps the most notable) focus their conservation efforts in assigning human rights—and not just animal rights—to nonhuman primates and, more specifically, great apes (greatapeproject.org, 2012, paras. 1-2). While the extent of rights assigned to animal rights are contested, basic human rights are firmly established and acknowledged by governments and other institutions. Further, assigning them *animal* rights reinforces the divide between humans and great apes, necessitating the very ranking systems and need for priorities that grouping them together would avoid. If instead we deem humans and great apes as fitting under the same category of rights, we are levelling the amount each is weighed when discussing conservation or other forms of assistance. Lastly, these legal rights would protect great apes from human exploitation and make human encroachment and habitat destruction prosecutable (greatapeproject.org, N.D. ¶3). Indirectly, assigning nonhuman primates equal moral rights defends their ability to live in their natural habitats, undisturbed by humans.

The Great Ape Project and other non-anthropocentric initiatives advocate a “live-and-let-live” principle. Non-interference philosophies can be upheld by conservation initiatives that protect specific areas of land from human influence. Unfortunately, these initiatives are wholly dependent on compliance with park boundaries and regulations. While they create laws and legislation that give nonhuman primates rights to exist and flourish safely, these initiatives are only as strong as the legal system in the area. Especially in critical areas where human livelihood suffers and locals may not understand conservationist agendas, patrolling parks and enforcing bans on destructive behaviours can be nearly impossible to implement effectively (Hill, 2002, p.1188; Treves et al, 2006, p. 384).

Because of these difficulties in maintaining non-anthropocentric initiatives, the trend in conservation is shifting towards initiatives that include local communities as agents. These initiatives are reminiscent of anthropocentric ones in that they focus on local communities. However, unlike anthropocentric agendas (for which the result is a healthy human community to the detriment of primate populations), these efforts use the well-being of primate populations to create healthy human communities. The most obvious method of doing this is by offering local communities livelihood incentives for conserving local primates and protecting their habitats (Hill, 2002 p. 1188; Lovett & Marshall, 2006, p. 114). By offering incentives to local communities, conservation efforts stand to benefit both populations and seemingly solve the ethical dilemma of prioritizing one over the other.

Nonetheless, these approaches utilize an economic framework to justify primate conservation. The economic approach, similar to the anthropogenic agenda, weighs the costs and benefits of assisting each population. The currency in this framework, however, is not species reproductive potential, but rather livelihood and literal currency. To motivate local communities, external agencies often speak of the benefits outweighing the costs to maintain conservation initiatives. For example, an agency may provide the community with new tree nurseries and educational facilities in exchange for the protection of local forests. In theory, the livelihood generated through these new institutions should be greater than that generated by traditional practises, which are detrimental to primate communities (practices such as hunting and trapping) (Hill, 2002, p. 1189). In these approaches, economic incentives are often negotiated, and communities are compliant as long as their gain is measurable and evident. This can become problematic, as it risks embedding the value of measurable gains and losses in these communities, which may lead to opportunistic conservation.

In his essay “Bonding, biophilia, biosynergy and the future of primates in the wild,” Rose (2011) offers two worldviews through which primate conservation can be approached. The first, a synergistic communal worldview, sees the environment in which we live as an integrated holistic system. The second perspective, termed competitive hierarchical, is a more Western worldview. Competitive hierarchical worldviews see the world as a competition that must be won by individuals at any cost to the environment they inhabit. Even in domains like conservation, which seem to be selfless and offer little gain to individuals, the competitive hierarchical worldview drives actions. Therefore, while a conservationist ethic can be reconciled with competitive hierarchical worldviews, such efforts are inherently selfish. For example, a competitive hierarchist who superficially aims to conserve a population is motivated by personal gain (acclaim;

personal interest in that taxa, etc.) (p. 246). What at first seems selfless is actually yet another match in the game that competitive hierarchists are trying to win.

This competitive rationale explains why corporations or individuals will "embellish their image as wildlife protectors to gain advantage over their corporate competitors for donor funding" (Rose, 2011 p. 246). Competition, even if it is over conservation, is driven by incentive, as with the incentive of grant funding in the above example. Essentially, the framework in which competitive hierarchists operate is capitalistic, anthropocentric, and individualistic, and the methods employed to achieve a goal will reflect these features. Imposing an incentive-centric system on a synergistic communal cultural can trigger a worldview shift into a competitive one. Understanding conservation efforts and the benefits generated from incentive programs may motivate local peoples to comply, but action is ultimately driven by self-interest and not by a desire to see the primates protected.

Theoretically, incentive-based, community-centred programmes should result in higher levels of protection to primates. Successful programs focus on alternative livelihood strategies, giving locals the tools to subsist without encroaching on primate habitats or interfering with primate populations. However, these benefits are dangerous, as they are entirely dependent on the favourableness of primate protection in a cost/benefit analysis. By adopting a competitive, incentive-based perspective on primate conservation, we are inviting the potential consequences of understanding primates as economic units.

For this purpose, economic units can be thought of as any item or substance that can be quantified in terms of gains or losses and considered in terms of trading potential. In this sense, complying with a primate conservation initiative leads a community to gain X advantage (quantifiable benefits). The presence of primates becomes equivalent to benefit X and are now measurable units of economic value. The primates have become valuable economically and take on the role of an exploitable resource. From this, it is easy to conjecture a situation in which any behavioural change on the locals' behalf is driven by economic incentive. The primates, as a proxy for economic development, become worth the benefit they bring.

In such a situation, what would occur if a corporation offered the locals a higher price for increased crop yields than the ecotourism industry could offer for continued tourism? Primates, as crop raiders, often interfere with optimizing crop yields (Hill, 2002 p. 1186). The primates now have a fixed value assigned to them by the cashflow generated via touristic activities and other reward-based conservation initiatives. If the

value of the crops is greater than this value, the locals will have no motivation to comply with conservation programmes. Simply put, since the perspectives on primates have not changed, the farmers have no ethical or moral obligations towards primates. Their moral obligation was to themselves and their economic state, using the primates as tools to succeed in these arenas. It follows that farmers will resume hunting and trapping of primates, seeking still to “win” economically within their anthropocentric, individualistic ethic. Their ethical duty, in this case, is to themselves and not the primates; any perceived benefit to the primate populations is coincidental.

The danger of commodifying primates in this manner does not end at primate communities; given that the incentives to locals are imposed by external agencies, human populations are under similar risk as primates but on a different scale. Similar to how human communities use primates to succeed economically, external agencies often use communities the same way to increase funding, satisfy shareholders, and create “waves” of change. The external agencies, whether NGOs or travel companies, are governed by similar economic ethics that attempt to maximize profits in a justifiable way (Rose, 2011, p. 246). Their moral duty may be not to the communities but to their funders and shareholders. Thus, if it becomes more economically profitable to pull support, or if the desired conservation goals are not being met sufficiently, a community can be abandoned to disastrous outcomes. Problems resulting from withdrawn support have been documented in many cases, such as in Sri Lanka, where the cessation of subsidized pesticide programs (caused by a shift in the economic motivations of an external corporation) led to an inability for farmers to maintain yields at a market level (Fennel, 2010 p. 143). The dramatic financial and livelihood impact this had on these farmers was a consequence of the farmers no longer fitting into the prioritized economic model upheld by the external agencies that had previously funded them.

Approaching conservation with such competitive hierarchal worldviews (anthropocentric, economic ethic) clearly creates ethical and logistical dilemmas. These problems originate from the fact that such ethics take a single unit's perspective and rank other units accordingly; they are ranked systems of priority determined by cost/benefit analyses. Such a ranking system justifies the community abandoning primates at times, just as it justifies corporations abandoning communities. Thus, while approaching conservation at a community level does connect the two groups, it does so through the perspective of only one. Take, for example, the case of orangutans and nearby farmers. To survive, an orangutan needs sufficient food resources. Faced with increasingly fragmented habitats, orangutans try to meet their nutritional requirements by raiding palm fields. Farmers, at the same time, need to protect their crops from orangutans to maximize their economic gain. Individualistic approaches try to balance these two sets of

needs, but because the ethic acknowledges the contrasting goals, this ethic still calls for prioritization and ranking.

One solution to prioritization is developing a more profound ecological understanding of both groups, as represented in eco-centric or reciprocal relationships between all beings (Baird-Callicot, 2001 p. 79). To refer again to Rose's (2011) definition of a synergistic communal worldview, such an ethic holds that each being has a specific place in an ecological landscape. Removing any being from its place creates the risk of the entire structure collapsing (2011, p. 246). Thus, value and importance are acephalous and cannot be ranked. Neither primates and humans exist to serve the other. Both exist in a continuous state of interaction with other ecological forces in which the only unit of consideration is integrity of the entire system (Baird-Callicot, 2001, p. 79). All beings comprise an integrated whole, and there are no priorities to consider. By this ecological ethic, both the farmer and orangutan still have needs, but there is an understanding that the two are dependent on each other for some needs and tied up in a complex series of ecological relationships for others. Removing or lessening the impact of either will not solve a problem, as it disturbs the integrity of the entire system. This can be seen with great clarity in the role primates play as important seed dispersers in many ecosystems. Likewise, humans thinning forests and hunting primates can sometimes (when done sustainably) benefit primate populations by opening resources and lessening competition (Hill, 2002, pp. 1185-1190). One population's priorities cannot be extracted from this equation, as both populations are intrinsically connected and integrated.

Calling for fundamental change in the way that we conceptualize conservation is not something that is feasible over a short timescale. As of now, research is being conducted to better understand the ethics that communities already hold towards neighbouring primates (Treves et al, 2006, p. 386). While a body of literature builds, current ethics can continue to proceed in the short term. The same goals are attained when hunting and trapping activities are controlled and forest habitats conserved. The change that needs to be made, however, is rather a theoretical one that will strengthen the practical solutions being employed. The understanding of both humans and primates as integral parts of a whole will solidify existing practical solutions and strengthen both the community's motivations to maintain programmes and corporations' motivations to fund them.

Calling for an enduring change in the understanding of primate conservation will lead to more sustainable efforts that are less vulnerable to being abandoned by external agencies and conditions. This will foster a more positive interconnected relationship between primates and humans and thereby ensure the health of both populations in the future.

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# Preserving Natural Beauty

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## ABSTRACT

This article pans into the world of art and considers its connection with nature by burrowing into Alyssa Ellis's painting, *Tree Shadows*, as well as explores the methods, tools, and process required in order for the painting to be created. Alyssa Ellis is a second-year student in Grant MacEwan University's Fine Arts Program with an instinctive passion for painting and nature. Learning of Ellis's search for and experience with painting nature, particularly trees, leads to a glimpse into her history of painting and with nature, which causes consideration for art as a portal capable of provoking environmental appreciation, compassion and conservation.

## Introducing The Project

"You only conserve what you cherish, and the arts help us to cherish certain places," (Waters, as cited in Curtis, 2009, p. 182).

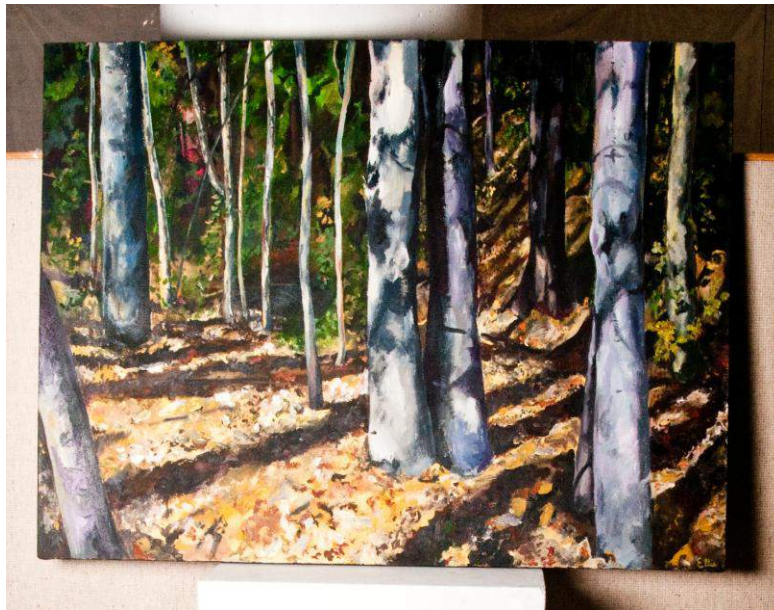
As summer merged with fall last year, and leaves began changing colours, Leslie Sharpe (Program Chair) led her ARTE 231 students on a plein-air painting fieldtrip to Whitemud Ravine Park where she instructed them to stay close to the trail and consider how to interpret a natural environment that is situated in an urban setting. This fieldtrip took place after the class had a lecture and slideshow about contemporary and traditional landscape painting practices. The students could choose to include urbanized aspects

such as a path, stairs and garbage can in their interpretation, or to convey the very natural experience one can encounter in an urban park setting. Alyssa Ellis's impressionistic-rooted acrylic painting, *Tree Shadows*, was an outcome of this fieldtrip. This painting was carefully rendered over a two-week period and showcases the deeper, more natural parts of the park's environment.

Alyssa Ellis agreed to be interviewed about her *Tree Shadows* painting, and the creative process and research that the project involved. The journey to answer these questions unravelled the mystery of her artistic process and research, and revealed her instinctual nature.

### **Experiencing for Research**

Once Ellis was on the Whitemud Ravine park trails, she chose to focus on what is natural beside the trail. After searching for approximately two hours, Ellis described coming across a naturally sloped area with a slight clearing where trees sparsely ran throughout. She spent two more hours in this place painting sketches, capturing photos, and absorbing this environment while she waited for the sun to begin setting so she could see light shining through the voids between the trees, bushes, and plants, and the shadow effects. Her sketches and photos would later be used, along with her memory of the experience, as foundations for the *Tree Shadows* painting and as a guide for its composition.





## Researching the Depiction

“Composition is by nature,” explained Ellis when asked about the placement of trees and other environmental aspects of her painting. The composition is the sole aspect of the environment that was exactly rendered within the painting. The slope of the terrain with a ditch area provoked Ellis to ponder if a creek had once flowed through the area. Weaving narratives for environments and naming beings and objects to encapsulate within Ellis’s art is part of her creative process— she enjoys visualizing a story for her audience to interpret, and sharing the beauty of the natural world with those who wish to journey through this landscape of interpretation.

Ellis identified Monet’s impressionistic works such as *Water Lilies* as a possible comparison to her artwork, especially when the following description of Monet’s work is considered:

“The brushstrokes and the paint begin to assume an unprecedented prominence. As a result, instead of accepting a canvas as a convincing representation of reality, the viewer is forced to account of the technique and medium in experiencing the picture. This is consistent with Monet’s recommendation that artists focus on a balanced paint scheme, form, and light of an object rather than its iconography. Monet emphasized the essence of a painted object as an abstract form and not as a replica of the thing itself,” (Adams, 2002, p. 825).

That *Tree Shadows* is impressionistic-rooted becomes more clear when the previous quote is considered with this explanation of impressionism: “In their concern with political commentary, the Realists had emphasized social observation, while the Impressionists were concerned with the natural properties of light. They studied changes in light and color caused by weather conditions, times of day, and seasons, making shadows and reflections important features of their iconography,” (Adams, 2002, p. 805).

Factors, such as paint choices and texture, were developed from memory and Ellis’s interpretation of what she witnessed. When choosing colours to use within the painting, she followed her instinct and disregarded consistency. Instinctively, she used a full spectrum of balanced hues within the *Tree Shadows*. “Nothing is used straight from the tube,” Ellis remarked. Paint colours were mixed based on personal attraction, a desire to use the full and balanced colour spectrum, what colours she felt should be present, and the artist’s mood when the scene was considered. For instance, *Tree Shadows* has

numerous and various darker and cooler tones, which reflects Ellis's being alone during her experience in the environment, as well as reflects the influence that the time periods imposed when she painted— typically during the hours of ten and two p.m.

The type of acrylic used also affects colour outcomes. Ellis prefers acrylics because she feels they offer better pigments and the acrylics cover a canvas easier. She also explained that she has often blended colours on canvas because experimenting in this way can result in unique shades, making the process more enjoyable. She estimated using about six different types of coloured paint tubes, including primary colours red, yellow, and blue, as well as bold purples and greens. No mediums were used during this painting process. Ellis noted that painting with acrylics is all about blending and layering. Typically, Ellis uses varying sizes of filbert brushes and a very small round brush— her preferred brush must be durable and of high quality.

The three by four feet canvas was personally assembled by Ellis using pinewood, then stretched and primed with gesso prior to painting. When asked about whether or not she takes environmentally-friendly approaches when using painting products, Ellis responded, “Unfortunately the paints can be harmful to the environment but only if they are dumped into natural areas. The key to help keeping these products out of the environment is to not waste. I try to use everything on my palette so nothing goes into the garbage or is washed down the drain.”

Ellis described the painting process she applied as beginning with under-painting to block out the painting. Then wet onto wet, drybrushing and impasto techniques were used interchangeably everywhere. Texture, especially the bark, within the painting was created by drybrushing. Ellis's targeted brush strokes, which are “sporadic..., loose but still soft, and not over-bearing,” were a primary important element in her painting because of the depth and texture that brush strokes add.

In *Tree Shadows*, highlights draw the eye towards a brighter red area to create a focal point for consideration. This red in the background behind the trees within the







painting was not originally present while at the ravine. Even the artist is not sure why she added this colour, yet the mysterious colour seems to provoke consideration— why is the red there and what does it indicate? This use of red arouses a narrative within the painting, along with other factors like the ditch and (or) dwelling that Ellis incorporated because it makes her audience consider elements in the painting on a deeper level in that the elements cause questioning around their purposes. When asked if her painting had been motivated by factors other than the Whitemud Ravine Park, Ellis identified Chiara Fersini as an Italian photographer whose shadowing techniques had inspired her.

When looking for inspiration for painting, Ellis explores photography sites with pictures of trees, yet prefers to see them firsthand if she can to add to her experience, or the feeling and mood of seeing the scene. Hence, Ellis prefers to do primary research. Her deep absorption and instinctual encapsulation of her environment indicate her appreciation of and connection with the natural environment.

### **Studying The Artist**

Ellis explained she feels like she's on a journey in which she is unsure where she is going. Currently, this journey has brought the twenty-year-old Edmonton-native to Grant MacEwan University, where she is a second-year student in the Bachelor of Fine Arts program with plans to further her education. In two years, Ellis estimated completing about 60 projects that varied in types of art. An inquiry as to why she chose Grant MacEwan University for her studies resulted in the following response:

I chose to take fine arts when I realized art is a language used worldwide. To me it is no different than taking French or Russian. I chose Grant MacEwan University for the boot camp qualities and standards they... [impose] upon their students. They are strict and hard but I figured if I could get through this, I could get through anything.





Ellis has been painting ever since childhood. Acrylic is her forté but she has experimented with many different media. Birds are often her inspiration along with nature photos. She has always been around nature— in scouts, always outside, camping, and hiking with her family. This is why she described being in nature as feeling like home because she experienced it so much in her youth.

Trees in particular give her the feeling of home. She explained every tree is different and every tree has a different bark, like a fingerprint. She admires that many trees have unique uses, (for instance, healing, materials and climbing). She shared that she has a bucket list of trees that she desires to see personally and photograph throughout her life. The eucalyptus deglupta in the Philippines is a type that she particularly wishes to paint. Ellis plans to continue capturing trees for many reasons, including their beauty— especially bark and texture attract her— their various colourings, and their capabilities.

### **Art Provoking Conservation**

When asked how she felt about nature and why it became a focus in her artwork, Ellis explained, “Everything goes back to nature. Everything is connected. If we don’t have nature we’re breaking that connection. When I think about it, I think about when I die. And I don’t have a religion so I feel like when I die I’m going to be put into the earth and it will accept me. So I want to honour it because everything goes back to nature.”

Her appreciation for nature, as well as her recognition of its relatedness to us, reminisces another quote: “...if we are going to have a new connection to the environment it will have to happen in individual hearts and souls...the artist can help us fall in love with the earth again,” (Berensohn 2002). Ellis’s art, particularly the *Tree Shadows* painting, encourages its audience to pause and appreciate what often goes unappreciated. Ellis is an example of how art that revolves

around nature eternalizes environment and provokes a desire to keep what is unquestionably beautiful and precious. Most importantly, Ellis achieves what Bill O'Toole (as cited in Blackwell Publishing Limited, 2007, p. 178) explains perfectly: "... The arts provide a different way of viewing the same thing ... they can turn what is a swamp full of mosquitos and snakes into something that should be saved because it is so beautiful." This is a means of speaking for the earth. Ellis aims to share what she recognizes as beauty and to eternalize this beauty for her audience's interpretation. Hence, the need to share can conjure connection and suggest a need for conservation.

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# Striving for Sustainability: Paul Johnston's Contributions to Conservation Biology

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## ABSTRACT

Paul Johnston, the lead scientist with Greenpeace International, combines scientific knowledge with public debate and awareness campaigns to work towards environmental change and sustainability. Opposed by numerous people internationally, Johnston is in a constant battle to change negative public perceptions of Greenpeace International and its endeavors. Through his position with Greenpeace International and as a credited biologist with a PhD in selenium toxicity in aquatic invertebrates, he has been involved in numerous international conferences with public organizations and industries. Johnston has developed a reputation through his tireless efforts and, regardless of criticism, his dedication to his beliefs. The fact that he backs his claims with real-world action demands respect in the fight against environmental degradation. Since few people have not heard of Greenpeace International, he supports the organization's capability to increase debate on various issues. Johnston's contributions to raising public awareness about environmental issues are important if society has a chance of changing.

## **Introduction**

Discussions about Greenpeace International often involve debate over the authenticity of claims and the use of illegal tactics to achieve goals. The organization has been accused of using fear tactics and misleading information to influence public opinion while others immediately discredit the organization due to its civil disobedience (Curtis, 1997, para. 1; LeGault, 1999). The organization's justification for using illegal tactics has been that other methods have failed to stop current climate trends so infringement on property rights, among other actions, is justified because it does less damage than humans are currently doing to the environment, an opinion supported by Al Gore (Burkeman, 2009). In addition, these actions serve to bring greater awareness to the issues involved (Henetz, 2009).

Greenpeace International's response to critics who claim the organization uses inaccurate information and misleading statistics has been to increase its reliance on scientific research. Much of this research is developed as a result of the actions of Paul Johnston who founded the Greenpeace Research Laboratory in 1987. Greenpeace International often uses the publications from the scientists of this lab to fight negative public perceptions that question its credibility and threaten the effectiveness of its environmental campaigns.

## **The Paul Johnston and the Greenpeace Research Laboratory**

Johnston has been an active conservation biologist for many years, beginning when he chose his undergraduate degree in marine biology, which he deemed to have been the main conservation study area at the time. His interest in marine conservation was again evident when he earned a PhD in selenium toxicity in aquatic invertebrates in 1984 (Greenpeace, n.d., How did you end up with the organization?, para. 1; University of Exeter, n.d., para. 2). During this time, Johnston began to follow Greenpeace International, believing in its potential to cause change in the environment and sustainability. However, Johnston did not become actively involved until the opportunity arose to be part of a Toxics Tour around the United Kingdom (Greenpeace, n.d.). Shortly after this tour, in the same year, he was a key figure in opening the Greenpeace Research Laboratory that has become increasingly important as people demand scientific evidence of claims made by those working to impede climate change. The research lab was opened in 1987 and is currently housed at the University of Exeter in the United Kingdom. The lab is part of Greenpeace Environmental Trust whose main goal is to increase public knowledge on the environment (Greenpeace Environmental Trust, 2011, Our Research Laboratories, paras. 1-2; Greenpeace Research Laboratory, 2012, para. 1).



The stated purpose of the lab is to “provide scientific advice and analytical support for Greenpeace offices worldwide” (Greenpeace Research Laboratory, 2012, para. 1). Through the use of various publications, both independent and in scientific papers, the lab aims to better inform people on the issues Greenpeace International has deemed to be most important and to provide credible statistics to those people fighting for the environment.

### **Greenpeace Research Laboratory Works to Change Public Opinions**

The Greenpeace Research Laboratory works to increase scientific knowledge and to initiate public debates through journal articles and commissioned reports, but it also focuses on getting accurate information to the general public through popular media (Greenpeace UK, n.d., paras. 2-3). Greenpeace International’s high public image, often supported by widely publicized illegal campaigns, puts it in a position to be extensively criticized by many people, whether justified or not.

Through his involvement with Greenpeace Research Laboratory, Johnston has done research on a variety of issues rather than focusing on one area of study. Furthermore, his research often involves controversial issues and is publicized by Greenpeace International as part of its campaigns for change. While there are those who support his conclusions, there are also those who oppose his results, which often means he must defend his studies publicly. This dynamic is further affected by public stigma and opinions about Greenpeace International and the authenticity of the scientific studies undertaken by the organization (Birmingham, 2011).

Opinions on Greenpeace International are divided, and the organization must sometimes work against preconceived notions that cause people to question its suggestions for change. Often this opposition is directed at the scientific conclusions made by Greenpeace International involving its research lab and the integrity of the scientists employed there, namely Johnston and those working with him. For example, in his book on toxic risk management Aynsley Kellow accused the Greenpeace International scientists of having a political mindset and discredits their findings as not peer reviewed, an opinion opposed by C. V. Howard in his book review (Howard, 2000, p. 317). From this example, it is clear that there are conflicting views on the organization itself rather than individual campaigns. Therefore, if Greenpeace International’s stances on environmental issues are to be taken seriously, it must first work to change negative opinions regarding its basic credibility and validity.

More recently, there have been claims that Greenpeace International is an anti-science group of radicals. Much of this criticism stems from actions such as the

destruction of a test crop of genetically modified foods in Australia, costing the producers over \$300 000 in damage (Kretowicz, 2011, para. 1; Preston, 2011). A number of people have added their comments to the debate over the ethics of this action and have generalized their arguments to the credibility of Greenpeace International scientists. For example, an outspoken, popular blog writer, John Birmingham, wrote that Greenpeace International merely chooses which science it wishes to cite to support its fight against genetically modified foods and by so doing ignores the scientific method (Birmingham, 2011, paras. 4, 6). The editor of *Cosmos Magazine* similarly expressed views that the organization “abandoned the rigour of science... when the science has been inconvenient” (da Silva, 2011, para. 3) and that it has become addicted to publicity (para. 5).

The opposing side to the debate surrounding the incident in Australia includes primarily those involved in Greenpeace International defending its actions, which is to be expected given the amount of damage caused when the crop was destroyed. Johnston responded to Kellow’s blog by explaining that scientists who work in the Greenpeace Research Laboratory work “to provide scientific and technical advice to Greenpeace” (Johnston, 2011, para. 3) and “work closely with the large number of scientifically qualified people employed by Greenpeace...and with scientists based at many institutions around the world” (para. 3) to achieve its goal. He also stressed that the method used in this campaign is understandably not acceptable to others as it was a last resort to bring to the public’s attention the unknown risk of genetically modified foods (paras. 3, 9). Therefore, while Johnston acknowledges there is public opposition, he is convinced the action is justified. Through this example, it is clear that from Johnston’s point of view, his first challenge is to convince people of the credibility of the research used to support Greenpeace International campaigns. Only when this happens will the organization be able to convince people to support the various environmental causes Johnston has dedicated his life to supporting.

### **Johnston’s Contributions to the Scientific Community**

The work of Johnston has had a direct impact and has resulted in some major perceivable changes. For example, Greenpeace International has worked for many years towards a ban of polyvinyl chloride (PVC) in a variety of products, many of which are children’s toys. Johnston was one of a group of scientists that ran an experiment to test the chemical composition of PVC toys from a variety of countries. The results of this study showed that almost all toys contained phthalates, the most common group of chemicals used to soften plastics for commercial use (Stringer, Labunska, Santillo, Johnston, Siddorn & Stephenson, 2000, p. 1). Phthalates have been shown in other

experiments to leach out of plastic into the air and other solvents and to have serious health effects such as slower learning, increased cancer risk, as well as negative impacts on the female reproductive system (Fatoki et al., 2010, p. 1; Lovekamp-Swan & Davis, 2003, p. 1; Stringer et al., 2000, pp. 1, 27-28, 31). This result, along with other studies, was used in an international campaign by Greenpeace International that has been successful in causing changes in both government and industry policy. In Canada, in November 1998, the government warned parents against giving their young children PVC toys if they come in contact with the mouth (Greenpeace, 2003, pp. 11-13). This is just one of many examples where the scientific studies of Johnston have been used by Greenpeace International to cause positive social change and is just another example of the contributions he has made.

Johnston has written many scientific review papers for a variety of journals as well as numerous opinion papers. These articles compile information about Johnston's ideals and are designed to highlight the benefits of the strategies and changes he suggests to improve environmental conservation and sustainability. As a conservation biologist with Greenpeace International, Johnston has looked into various issues, which makes summarizing his contributions to the scientific field challenging. His scientific papers range from experiments on the chemical additives in children's toys to the effect of human chemical use on aquatic species (Smith, Swindlehurst, Johnston, & Vethaak, 1995; Stringer et al., 2000). Furthermore, his scientific reviews compile knowledge surrounding a variety of topics including the negative impacts of using risk assessment as opposed to the precautionary principle in policy decisions, as well as the effects of sewage wastes on the increase of chemicals in aquatic environments (Johnston et al., 1993; Santillo, Stringer, Johnston, & Tickner, 1998). These reviews are not limited to journals; Greenpeace International also releases its own publications, such as *Oceans in Peril: Protecting Marine Biodiversity*, published in 2007, which outlines the state of the world's oceans and the authors' perceived requirements and suggestions for its conservation (Allsopp, Page, Johnston, & Santillo, 2007).

Through his work with the Greenpeace Research Laboratory, Johnston has built a reputation in the scientific community as well as with the general public. In 2006, he was listed at number forty of the UK Environmental Agency's top 100 "eco heroes," voted on by a number of scientists and political personnel (Environment Agency, n.d., pp. 1, 3). Furthermore, he has been involved in conferences and committees, where he is acknowledged as a representative of the views of Greenpeace International as well as a respected biologist with knowledge from research in many areas. For example, in 2009, he was one of a number of experts, chosen by international governments, as part of the Convention on Biological Diversity in Ottawa which focused on marine protected areas.

The result of this conference was a 55-page report aimed at governments which detailed scientific criteria, guidelines and initial steps that should be used in determining areas requiring protection at the national and international level (Convention on Biological Diversity, 2009).

Johnston was also one of three people on a panel discussing geo-engineering as part of the Royal Geographical Society's 21st Century Challenges in 2009 (2011). He argued against developing techniques such as ocean fertilization and carbon capture storage as means to delay climate change because of concerns that this will take away from working towards permanent solutions with minimal risks (Johnston, 2009). These arguments are part of a larger social discussion that takes place in scientific communities and is also used in the general media to inform the public of these issues.

Also in 2009, Johnston, acknowledged as a high-profile science leader, represented Greenpeace International at a workshop of 21 professionals for the European Commission's Joint Research Centre and the American Association for the Advancement of Science. These professionals developed guidelines for using science during policy formation by focusing on integrity, openness, clarity and engagement regarding the issues. The intent of these guidelines is to avoid biased representations or misleading conclusions in government and industry decisions (European Commission & the American Association for the Advancement of Science, 2009).

Johnston is involved in the scientific community and is also recognized by various industries where he has spoken at a number of conferences. In May 2011, he was a key speaker at the European Tuna Conference which included sessions on sustainability and environmental issues faced by the industry (European Tuna Conference, 2011). He was also a guest speaker at the 2011 members' day for the Paint Research Association, a surface coating manufacturer, to discuss issues around sustainability (Pera Technology, 2011).

This international inclusion in scientific discussions and his contributions in the form of scientific papers and studies are evidence of the reputation Johnston has established through his efforts in promoting conservation, regardless of opposition. Furthermore, it demonstrates his willingness to defend his position on environmental issues within the international scientific community through scientific debate.

### **Johnston's Push for Sustainability**

In an interview for a Greenpeace International publication, Johnston stated his support for Greenpeace International stems from his belief that it "remains the best

organization in the world to promote environmental change and sustainability” (Greenpeace, n.d.), and he spoke of a hope for a sustainable future. Given his personal emphasis on sustainability, and its importance to conservation biology, it is crucial to highlight Johnston’s contributions to this idea. He has written one paper primarily on the definition of sustainability to distinguish it from the modern association with sustainable development (Johnston, Everard, Santillo, & Robert, 2007, p. 60). As a guest speaker at industry conferences, his main focus has been the sustainable development of resources. Furthermore, his arguments against geo-engineering involve the fact that these techniques do not promote a sustainable future (Johnston, 2009).

Another of Johnston’s arguments for sustainability relates to “the precautionary principle,” the idea that new policies should not be implemented if the environmental risks associated with them cannot be determined (Johnston & Santillo, 2006, p. 2). He has written scientific papers on the importance of using this principle as opposed to “risk management,” a policy based on known risk of a negative outcome, which can be affected by short comings in the scientific method such as uncertainties (Santillo et al., 1998, pp. 948-949). For example, using risk management, the toxicity of a chemical would be measured based on current knowledge without consideration that future studies may find an increased chance of harm. Other authors have cited Johnston’s ideas in a number of papers published in scientific journals such as *Conservation Biology* (Wilhere, 2002) and *Agriculture, Ecosystems & Environment* (Brimner & Boland, 2003). This inclusion in other scientific literature provides further validation when the arguments are used to pressure governments that are developing decision making procedures.

## **Conclusion**

As a conservation biologist, Johnston has dedicated his life to studying the human impacts on the environment and to improving current trends to change the stress humans place on ecosystems. While studies that he has performed have been limited, his major contributions to conservation biology are the improved accessibility and compilation of the conclusions of others as well as his emphasis on sustainability. He is able to raise issues about the environment and to inspire people to talk about the impacts and consider the possibility of changing current trends. His position as the top scientist for Greenpeace International has opened him up to criticism, as has his support of illegal actions such as the destruction of the genetically modified crop in Australia (Kretowicz, 2011, para. 1; Preston, 2011).

Greenpeace International remains a controversial organization and while members of the public may not necessarily agree with its radical opinions, the fact remains that these high-publicity acts, which are often illegal, are the campaigns that get publicity and improve dialogue and debate on the issues. Few members of the general public have read Johnston's papers on marine protection areas because they are not deemed newsworthy. In this respect, this scientist's conviction that Greenpeace International is the best means to cause change is understandable because society as a whole must change rather than just government policy and industry actions. For this to happen, the general public must also discuss conservation issues (Greenpeace, n.d., "What does Greenpeace mean to you", para. 1). Furthermore, Johnston has taken a stance on environmental conservation and has continued to stick to these beliefs and act on them regardless of opposition, which is important in conservation efforts where politics can often get in the way of real change. While individuals may not agree with all of Johnston's specific beliefs, his goal and determination to change the trend of ecosystem destruction caused by humans and to promote sustainability throughout the world remains respectable. Many people criticize Johnston's beliefs but few of these individuals offer solutions to problems.

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# The Harmony of Nature

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Composer: Jeremy West\*

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## ABSTRACT

This article is an exploration of the award-winning piece *Earth's Lonely Heart* composed by Jeremy West. More specifically, a description of his influences, beliefs, and techniques, combined with his passion for the environment, his technical expertise, and his musical talents are presented. It was only after joining MacEwan's music program that Jeremy realized his passion for composition and became more than *simply a drummer*. His inspiration for the piece was humanity's symbiotic relationship with the Earth and how we as humans, treat the Earth.

## The Composer



Composer Jeremy West

It sometimes seems like the smallest things in life can often become the most pivotal— those tiny nudges that subtly direct us in new and unimagined paths. I started off my music career as a drummer. Throughout the process of my first two years at Grant MacEwan's Music Diploma program, I learned a lot about myself as a musician.

All throughout first year, my main focus was to get into second year Performance, because drums were my only way of communicating my musical ideas. Once in the

second year performance program, my mind started to expand from being simply a drummer and into a full-fledged musician. I was intrigued by the process of writing music and was inspired, so much so, that I decided to come back for a third year, majoring in Composition. I have learned that this was my intended path and that I can express myself, musically, a lot more accurately through composition (Jeremy West, personal communications, March 30, April 10, 2012).

## **The Composition**

Like many artistic creations, this piece started in a humble place. It began as a project for a Music Technology Class. As part of the requirements of the project, Jeremy was tasked with creating an ambient piece of music. And while he did have his inspirations, Jeremy did not start out knowing exactly how he wanted the piece to sound. Rather, he let his talent and the music itself create a piece that finely balanced synthesized melodies with the raw, natural beauty of the human voice. This approach provided a solid basis for his piece, and *Earth's Lonely Heart* was selected to be performed at the Composer's Concert, an event celebrating the best compositions created that year by graduating music students.

When creating his original composition, *Earth's Lonely Heart*, Jeremy began with a synthesizer program known as Omnisphere to transition and co-ordinate various sound and music samples (or patches, as they are known) in order to create the ambient background melody. As listed on the Omnisphere manufacturer's, Spectrasonic, website, Omnisphere contains a "vast core library-Over 40GB with thousands of sounds" (2010). Because of this large library of sounds, a composer or musician is able to transform a multitude of everyday sounds into something ethereal.

By using the synthesizer, a composer such as Jeremy has greater flexibility and control in how his piece is created. Omnisphere allows the user to layer or "stack" sounds seamlessly and with great precision, as well as apply up to twelve different special effects to each sample (2010). To set the tone of the piece, a technique that was applied involved "reverse reverb," which was defined as "a reverb that runs backwards. So [sic] instead of the reverb starting with the sound and gradually decaying, it starts quietly and gets louder until the original sound is heard" (Reverse Reverb definition. Loopblog, 2012).

There are two vocal parts in this musical composition: the first is a choral sample — "a sound or short piece of audio stored digitally in a computer, synthesizer or Sampler" (2007, sonicspot, glossary of musical terms, 2012) — and the second part: a solitary



Composer Jeremy West and Writer Katie Delay

female voice, sung by Jeremy's classmate, Sydney Leverenz. The piece begins with the choral sample that applies the reverse reverb technique, which to the listener suggests the following phrasing: "Not gonna stay". To Jeremy, that line "Not gonna stay" relates to his belief that "the Earth will not stay the same if we keep treating it the way we are" (West, p. 2. 2012). The solitary human

voice, subdued at the beginning and building with a crescendo at the close as the music transitions from a highly synthetic sound to a more natural quality, is seen by the composer to represent the incomparable beauty of nature. That, "even though the natural beauty of the human voice and the use of electronics can be considered two completely separate entities, they come together in harmony and create this comfortable environment that we can all love and enjoy in the meantime" (West, personal communication, 2012).

This ability to combine two seemingly disparate influences or sounds into a harmonious balance is at the core of what it means to be a composer. To truly create takes not just technical aptitude or musical talent but also ingenuity—to draw links between opposites— and perspicacity—to be unafraid of taking risks and pushing boundaries.

### **The Inspiration**

Inspiration can sometimes be the most elusive of the muses. For Newton (1726) it was the apple, for Darwin (1835) it was the Galapagos Islands. Like scientists, musicians and composers draw their inspiration from the objects, places, and ideas that surround them. A source of inspiration for this piece is how Jeremy views the world as a living entity, one that humans are meant to be living harmoniously with. That, like in the movie *Avatar* (another of his inspirations), all energy is shared by everything that exists on this world; that because of humanity's greed, our relationship with the Earth is becoming more parasitic.

This theory has been most recently popularized by the movie *Avatar* by James Cameron. A movie which, according to Taylor and Ivakhiv (2010) "raises critical

questions for anyone concerned with the clash between industrial-extractive capitalism and the health of environmental systems, or between capitalism and its nature-allied victims” (para. 1, p. 390). In the film, a technologically advanced human race plays the role of the invaders and usurpers, bent on destroying the paradise planet of Pandora, all for the sake of commercially valuable minerals. To Jeremy, this movie represents the core of how humanity abuses the Earth for the sake of greed.

While *Avatar* has generated fresh awareness of this belief of the Earth as a living entity in mainstream culture, it has been around since the 1970s and is known in the scientific world as the Gaia Hypothesis. Initially presented in 1965 by Lovelock (2000) in his paper *A Physical Basis For Life Detection Experiments*, and later formalized and expanded upon in his seminal paper *Atmospheric Homeostasis by and for the biosphere: The Gaia Hypothesis* (1974), Lovelock postulated that “the total ensemble of living organisms which constitute the biosphere can act as a single entity to regulate chemical composition, surface pH, and possibly also climate. The notion of the biosphere as an active adaptive control system able to maintain the Earth in homeostasis [is what] we are calling the 'Gaia' hypothesis” (1974, para. 6. jameslovelock.org).

With *Earth's Lonely Heart*, this self-regulating system is given a voice both triumphant and sorrowful. While Gaia strives to be in harmony with the human world, humanity does not strive to be in balance with her. Greed has blinded humans to the natural beauty that surrounds them, cutting them off from the natural world.

### **Earth Song and Earth Science**

Lovelock (2000) called atmospheric radiation “the unceasing song of life...audible to anyone with a receiver...”(p. 7). For a man of hard science to liken radiation with music is no wonder. Like radiation, music surrounds us almost wherever we go. Whether it is a symphony orchestra or the wind blowing through sycamores, music is everywhere—a person just has to listen and allow it to change them. While a piece like *Earth's Lonely Heart* or even *Avatar* may inspire an individual to change his or her perceptions, the arts alone will not change the world. It will take people from all fields: from scientists, politicians, environmentalists, and the arts to cause true change and create harmony on Earth.

Jeremy West's original musical piece can be heard by visiting either of the following links: <https://journals.macewan.ca/index.php/earthcommon/about/index> or at his account on Soundcloud, <http://soundcloud.com/jeremy-west-1>.

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\*Writer: Katherine Delay is an International Section Editor with *Earth Common Journal*, and a first year Bachelor of Communication Studies student, majoring in Professional Communication.

\*Composer: Jeremy West is a recent graduate of the Music Program at Grant MacEwan University. Majoring in Performance as well as Composition, Jeremy is planning on continuing his education in composition and is hoping to write music for films in the future.

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# The Potential for an Impending Sea-Level Rise

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## **ABSTRACT**

Sea level rise has become one of the most discussed topics regarding climate change. In the past the sea level has been known to rise several meters during interglacial periods. The rapid spread of human populations and new technological innovations have led to an outpouring of carbon dioxide over the centuries causing the global mean temperature to rise by 0.8°C. This slight increase in temperature has raised sea level from thermal expansion of the ocean and is having a dramatic effect on the cryosphere. Retreating glaciers continue to contribute to the current rate of sea level rise but the potential for the Greenland and Antarctic ice sheets to melt from increasing global temperatures could raise the ocean by more than 1 m this century. Low-lying developing countries such as Bangladesh and Vietnam are the most vulnerable to a rise in sea level due to lack of infrastructure, high population densities, and geographic locations situated on a delta. In the developed world, Australia and Italy are at risk areas due to large populations found along the coast in both countries. If the rate of mass loss from glaciers and ice sheets continue a future sea level rise is imminent.

## **Introduction**

Sea level rise has surfaced as one of the most intensely studied and discussed aspects of climate change in recent years. The mean global temperature has increased by 0.8°C

in the last century and according to the Intergovernmental Panel on Climate Change (IPCC) the mean global temperature is expected to continue increasing at a more rapid rate (Kump et al., 2010, p. 323). Until recently, thermal expansion of seawater from increased temperatures has been the most significant source of sea level rise (Richardson et al., 2011, p. 51) at a rate of 1.6 mm/year (Curtis and Schneider, 2011, p. 31). However, the rapid melt water run-off from terrestrial and land locked glaciers into the oceans as stated by Barry (2006) is raising sea level by 15-20% (p. 285) or 3.1 mm/year (Curtis & Schneider, 2011, p. 31). If current mass loss continues, glaciers have the potential to raise sea level by 40 cm (Kump et al., 2010, p. 322) this century.

The contribution from glaciers is minimal when compared to the massive amounts of ice stored in the polar ice sheets. Evidence from the Earth's last interglacial period, the Eemian, suggests both the Greenland and Antarctic ice sheets have had significant contributions to sea level rise of about 6 to 9 m (Richardson et al., 2011, p. 58). The IPCC uses past climate scenarios to help predict rates of future sea level rise and the effect that the melting of the polar ice sheets would have on countries around the world. Currently, the projected best-case scenario by the IPCC is for sea levels to rise by less than 0.59 m by the year 2100 (Curtis & Schneider, 2011, p. 31). If the ocean were to rise by 0.5 m, it is estimated that 10% of the global population, over 650 million people, would be directly impacted (Richardson et al., 2011, p. 66). Many lowland developing countries would be at risk from flooding, storm surges, loss of land and loss of life. The projected maximum sea level rise for the 21<sup>st</sup> century is about 2 m (p. 63). Yet if Greenland and Antarctica were to melt entirely, eustatic sea levels could climb by 7 m and 70 m respectively (Kump et al., 2010, p. 323). Predicting the outcome of the interconnected earth system remains very much a guessing game, which makes it imperative that nations prepare for worst-case scenarios. This report will discuss the current systems in place contributing to sea level rise, the predicted impact of future contributions from the diminishing Greenland and Antarctic ice sheets, and how it would impact low-lying developing countries as well as developed countries.

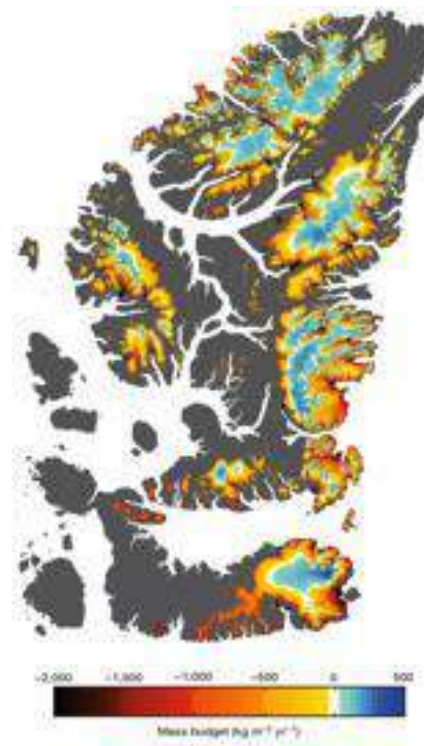
## **Results**

With global temperatures continuing to increase, terrestrial glaciers are the major contributing factor to eustatic sea level rise this century. The strongest mass loss has been seen in Canada, Alaska, and Patagonia. Between 2005 and 2009, the Canadian Arctic archipelagos (Fig. 1) experienced some of the warmest summer temperatures on record (Gardner et al., 2011, p. 357). It was discovered by Gardner et al. (2011) that a one degree Kelvin rise in mean surface air temperature results in an additional 64 gigatons, with a gigaton being 1 000 000 000 metric tons, of ice lost to the oceans (p.

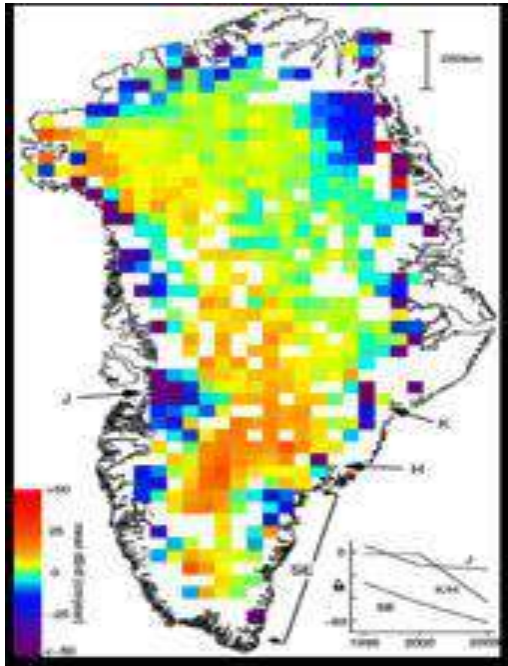


359). Similarly, in the Gulf of Alaska, glaciers lost mass at an average rate of  $88 \text{ Gt/year}^{-1}$ . Glaciers around the globe are retreating at an alarming rate with the East African Mountains expected to have no ice remaining within two to three decades and the loss of ice mass has doubled in the Patagonian ice fields (Barry, 2006, p. 286) to a rate of  $28 \text{ Gt/year}^{-1}$  (Gardner et al., 2011, p. 359). If the current rate of glacial mass loss continues, sea level could rise by 40 cm (Kump et al., 2010, p. 323) this century. Predicting how much the ocean will rise in the future has been a controversial issue, however, it is fully understood that terrestrial glaciers are contributing to sea level rise. It is not well understood to what extent the polar ice caps of Greenland and Antarctica are contributing to sea levels.

The Greenland ice sheet covers almost 80% of total land area in Greenland and contains enough water to raise sea level by 7m (Kump et al., 2010, p. 324) if it were to melt completely. The average global temperature has increased by  $0.8^\circ\text{C}$  in the last century. The Arctic is experiencing an increase that is twice the global average; in effect the Greenland ice sheet is experiencing a more rapid decline (Fig. 2) than the Antarctic ice sheet (Richardson et al., 2011, p. 169). Due to lower latitudes and warmer temperatures the melt season has increased by 50 days and the ice sheet is losing volume at a rate of  $200 \text{ Gt/year}^{-1}$  (p. 169). Consequently, this is a substantial difference from the  $74 \text{ Gt/year}^{-1}$  the ice sheet was losing between 1997 and 2003 that the IPCC Third Assessment used in determining the Greenland ice sheet contributions to sea level rise (Dasgupta et al., 2008, p. 3). If the current rate of melting continues, the Greenland ice sheet could contribute to a 50 cm global sea level rise (Richardson et al., 2011, p. 169) by the end of the century.



**Fig. 1.** Surface mass budget of the northern Canadian Arctic Archipelago from 2003 to 2009. Emphasizing the extreme mass loss at outlets of glaciers as indicated in black (Gardner et al. 2011).



**Fig. 2.** Elevation changes from altimeter measurements on the Greenland ice sheet. Rapid thinning is seen at outlet glaciers J, H and K (Lemke

Accurate measurements are vital in predicting future ocean levels. Since the IPCC have recognized the importance ice caps could have on sea level rise, there has been a push for advancements in technological surveying equipment. A new coastal database has been developed that is specifically designed to address the vulnerabilities and the needs of coastal areas under sea level rise scenarios (Vafeidis et al., 2008, p. 922). Advancements in altimetry, which measures altitude, and interferometry, which measures incoming electromagnetic waves, have allowed researchers to obtain more accurate measurements on the distribution of snow fall, mass imbalance and the rate of retreat (Shepard & Winghamz, 2007, p. 1) ice caps are experiencing. Satellite imaging from the Gravity Recovery and Climate Experiment, or GRACE has also

been a major contributor in providing visual proof of rapid ice mass loss in Greenland and Antarctica (Richardson et al., 2011, p. 59). Antarctica remains one of the most difficult areas to study in the world due to its climate and location but could have the most substantial effect on sea level rise.

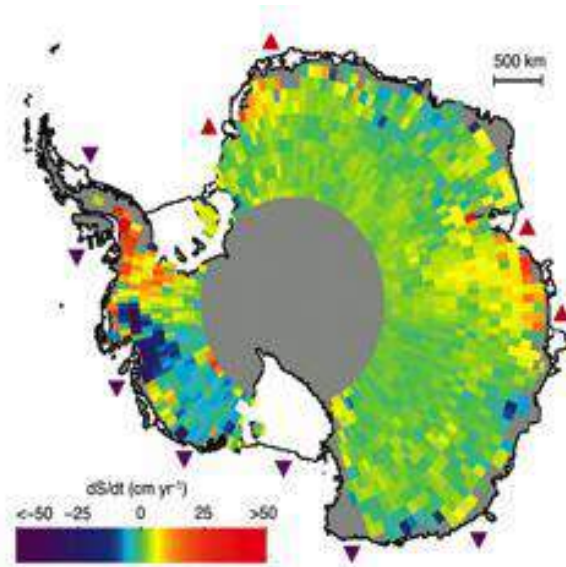
The Antarctic continent contains the world's largest amount of frozen fresh water (Gomez et al., 2010, p. 623). Experts agree that if global warming were to surpass 4°C (Richardson et al., 2011, p. 170) the Antarctic ice sheets would melt causing the ocean to rise by 60 to 70 meters (Kump et al., 2010, p. 323). Fortunately, global temperatures have not exceeded 4°C, but the present 0.8°C increase in the last hundred years is having a noticeable impact in Antarctica. Sections of the Larsen Ice Shelf in the Antarctica Peninsula have thinned and collapsed (Shepard & Winghamz, 2007, p. 1). The breakup of the Larson A and Larson B ice shelves in 1995 and 2002 respectively, have accelerated glacier flow into the ocean (Jakobsson et al., 2010, p. 691). The Pine Island Glacier has retreated up to 1.2 km/year<sup>-1</sup> and is thinning at a rate of about 1.6m/year<sup>-1</sup> (Shepard & Winghamz, 2007, p. 1). This glacier is considered to be highly unstable because it has punched through the ice shelves contributing to nearly 30% of ice drainage from the West Antarctic ice sheet (Jakobsson et al., 2010, p. 691). Drainage of melt water into the

Oceans may be accelerated by blue ice that is found in Antarctica. Blue ice normally has large ice grains and low albedo that can accelerate melt water by almost 30 times the rate of snow melt (Liston & Winther, 2005, p. 1479). The current rate of melting is not evenly distributed on the Antarctic continent and the ice sheets are divided into two regions, the East and West Antarctic ice sheets.

The West Antarctic Ice Sheet, or WAIS, has the potential to raise sea levels by 8.4m (Gomez et al., 2010, p. 629). Measurements from the Global Positioning System have raised concerns that surface melt water is increasing in flow velocity and penetrating through to the bedrock, accelerating ice flow to the ocean when the WAIS is already losing mass at about 50 Gt/year<sup>-1</sup> (Shepard & Winghamz, 2007, p. 1). The WAIS is unique because two thirds of it rests on bedrock below sea level, which makes it prone to more rapid melting from warming ocean temperatures (Richardson et al., 2011, p. 64). Scientists fear that as the ocean warms, the WAIS might collapse under its own weight from losing mass beneath the surface, causing the collapse of the ice shelves (p. 66) that support the WAIS, which could lead to a free-floating ice sheet. Ice sheets have a gravitational pull on the surrounding ocean, but as fresh water enters the ocean there is a build-up of water close to the ice mass which reverses the cycle and restricts the water from dispersing (Gomez et al., 2010, p. 624) and speeds up melting under the ice sheet. This cycle is known as a fingerprint (Douglas, 2008, p. 218) and is important in aiding scientists to accurately predict future sea level rise. Estimates are that if the WAIS

continues to recede at its current rate, it would contribute up to 60 cm (Richardson et al., 2011, p. 170) of eustatic sea level rise during this century. This contribution, however, would be minor in comparison to the East Antarctica Ice Sheet.

The East Antarctica Ice Sheet, or EAIS, is much larger than the WAIS and contains the largest reservoir of ice in the world with the potential to raise the ocean by 18 m (Gomez et al., 2010, p. 629). The EAIS is actually gaining in mass from increased snowfall (Fig. 3) because warmer oceans increase evaporation rates. The ice sheet is



**Fig. 3.** Elevation changes from altimeter measurements over Antarctic ice sheet. Ice shelves may be thickening or thinning (Lemke and Ren 2007).

expected to thicken for the next 50 to 100 years (Kump et al., 2010, p. 323) at a rate of 25 Gt/year<sup>-1</sup> (Shepard & Winghamz, 2007, p. 1). The EAIS gaining ice mass may help to decrease the rate of sea level rise from increasing temperatures, but it will ultimately fall short when the mass loss of other regions is taken into consideration (Kump et al., 2010, p. 323). Although most of the EAIS is growing, it is important to note that there are two glaciers in East Antarctica (Shepard & Winghamz, 2007, p. 1) that are losing mass. The potential threat of rising sea levels is a global concern because every country on Earth would be directly or indirectly affected by it.

## Discussion

Even a slight change in sea level will have an immediate effect on the thirty-three countries that have land below sea level. Developing countries are especially at risk because of their lower adaptive capacity (Richardson et al., 2011, p. 67). Bangladesh is one of the most vulnerable (Ward, 2010, p. 155) with almost half of its land area less than 8 m above sea level. Bangladesh is situated on a large delta that is prone to flooding caused by monsoons, glacier run off from the Himalayas, and severe storm surges from cyclones. Some experts predict that a 20 cm increase in sea level in the Bay of Bengal will displace almost 10 million people in Bangladesh and effectively 20% of the land area would be underwater (p. 156). This increase does not include areas that would be affected by storm surges and salt contamination of freshwater. Historically, storms and floods have had a devastating impact on human lives in the country. Unlike developed nations, Bangladesh has not constructed any infrastructure like dams or dikes to counter the threat of a rising ocean and they do not intend to (p. 226). The unprotected coast and high level of poverty in Bangladesh will only worsen the problem as sea levels rise.

According to a study done by Dasgupta et al. (2009), East Asia (Fig. 4) would be the most severely impacted region in the developing world with respect to sea level rise (p. 16). Dasgupta et al. (2009) compared 84 developing countries that were assessed based on impacts on land area, population, gross domestic product, agriculture, and wetlands (p. 4). The results put Vietnam as the most impacted country in four out of the five categories. The reason

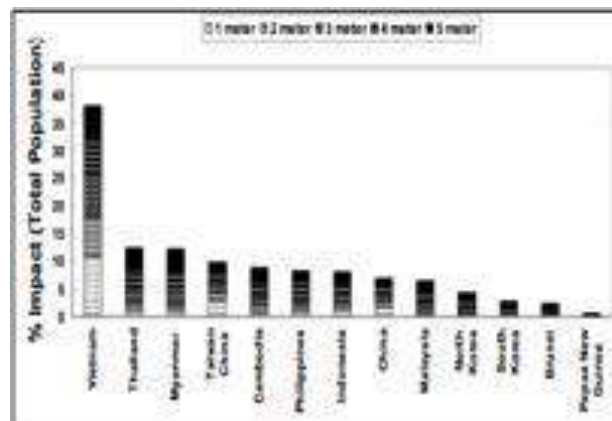


Fig. 4. Percentage of population impacted in East Asia at different levels of sea level rise (Dasgupta et al. 2009).

Vietnam is so susceptible to ocean levels is similar to why Bangladesh is so vulnerable; the southern half of the country sits on the Mekong and Red River Deltas. A large portion of Vietnam's population and economic activity is found in this region. A 1 m rise in sea level would impact 10.8% of the population and 10% of its GDP.

Although developing countries are more vulnerable to ocean levels, the developed world would not be unaffected by sea level rise. Australia and Italy are considered the most vulnerable of developed countries to sea level rise due to the majority of the population and infrastructure located along the coast (Richardson et al., 2011, p. 67) and as a result governments have heavily invested in planning for adaptation. The Australian Government Department of Climate Change estimates that a sea level rise of more than 1 m will displace 250 000 people from their homes (p. 58). Venice, one of the most iconic cities of the Renaissance in Italy and a United Nations World Heritage Site is at severe risk from changing sea levels. It was built on soft sediment and the heavy buildings are increasing its decline into the seabed. Additionally, the water line in Venice is 25 cm higher than in 1897 when the reference line was established (Ward, 2010, p. 166). The government has spent more than 15 billion in adaptation plans, most of which has gone to reinforcement of ancient sea walls (Richardson et al., 2011, p. 401) and break waters. Some critics have suggested Venice be abandoned (Ward, 2010, p. 167) as flooding has become more frequent and is beginning to erode the brickwork of the buildings. The loss of such a magnificent city would undoubtedly stand as dramatic evidence for the consequences of sea level rise.

## **Conclusion**

The ocean is continuing to rise at a more rapid rate than in the previous century. Contributions from the Greenland and Antarctic ice sheets have the potential to raise sea level by several meters. For now, melting ice sheets have not made a significant impact on sea levels unlike the fresh water run-off from terrestrial glaciers. Glaciers are responsible for the current rise in ocean levels that will put many low-lying developing countries at risk to increased flooding and has prompted many developed countries to prepare adaptation plans for oceans that will continue rising over the next century. A rise in the sea level would have devastating consequences, most of which the full extent of is not understood, and may result in the largest displacement of people the world has ever seen.

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# *Dune*: Desert Planet

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## ABSTRACT

This article is a review of the science fiction classic *Dune*, by Frank Herbert, and its environmental message. By designing an entirely new universe for his masterpiece, Herbert enables the reader to draw perspective about the world of 20<sup>th</sup>, and 21<sup>st</sup>, century Earth, and where humanity is possibly headed. *Dune*, however, is more than just a space opera, it is an enduring message about the struggle between conservation and human avarice.

## The Book

Science fiction can be, and often is, a great source of inspiration. One of the first books to inspire me to look at the world through a different lens was *Dune*. Written by Frank Herbert, a former editor, journalist, and political speechwriter, and published in 1965, *Dune* is the story of how Paul Atreides, the son and heir of Duke Leto Atreides, comes to rule the harsh desert planet *Arrakis*, home of the rarest commodity in the universe—the spice *Melange*. In the feudal universe of the 1100<sup>th</sup> Century, the ability to exert control over the spice trade is to the Great Houses (noble families) what the oil trade has become to most nations in the 21<sup>st</sup> century (p. 67).

The book begins on Paul's home-world of Caladan; covered by vast oceans. Caladan is considered a poor planet, as its only export is *pundi* rice (Herbert, 1965, p. 68). Within the first chapter, the reader learns that Paul's father, the Duke Leto—the ruler of the planet Caladan—will assume control of *Arrakis*, replacing the Atreides sworn enemies,



the Harkonnens, a rival House known for its cruelty and wanton abuse of resources (p. 5). By transitioning the narrative from Caladan to Arrakis; Herbert creates a shift from an all water environment to one that is starkly void of that precious commodity, any moisture; this dialectic provides a clear image of what Earth's future may be, if water continues to be treated as a marketable commodity, and not a right held in common for all.

While it possesses a narcotic effect, the spice is valued most highly by two factions: the Bene Gesserit Sisterhood, an order obsessed with preserving the best of humanity and maintaining political balance (Herbert, 1965, pp.18-19), and the Spacing Guild, a sect of beings who through long use of the spice are no longer truly human, and who possess a total monopoly on all interstellar travel. The Bene Gesserit used the spice to extend their perceptions, allowing them to look into the future, the past, and the present, via accessing a form of genetic memory. As well, the spice grants the strongest of them the ability to see the truth of what a person is saying—a useful ability in political situations (p. 19). For the Navigators of the Spacing Guild, the spice Melange grants a limited precognition, which enables the user the ability to see a clear path through space and time— without this ability, interstellar travel could not exist (p. 828). For users of the noble houses, who can afford it, the spice has life-enhancing properties; it allows for greater health and vitality, granting the user the capacity to live for hundreds of years (pp. 103, 169, 848).

It is also a highly addictive substance that has been the justification of many inter-House wars and assassinations, including the one that kills Paul's father, and sends Paul and his mother, the concubine-lady Jessica fleeing into the deep desert— and to the Fremen, the wild people of the desert (pp. 256-435). With the interplay between these three factions, a parallel is easily drawn to the many international conflicts over oil in the past century; as well as what might be in store for humanity in the next century in regards to the control of water.

Through a dazzling array of characters, plots, sub-plots, machinations, and maneuvers, *Dune* questions the nature of power, religion, government, drug addiction, and corruption. But *Dune* is more than just a *mélee* of Machiavellian intricacies and human fallacies.

It is about nature and environmental balance. It is also a reflection on how natural resources, specifically water, are commoditized and devalued by those with wealth and power. For example: on Arrakis, water is constantly in short supply (Herbert, 1965, p. 101) and in high demand, and the polar ice caps are mined for it (p. 98). To waste water

is considered an act of great foolishness, and it is an act that those who are rich enough display. The Harkonnens, for example, used water as a weapon to demoralize and dehumanize those under their power:

Beside each plate on the long table stood a flagon of water. There was enough water along the table, the Duke estimated, to keep a poor Arrakeen family for more than a year.

Flanking the doorway in which he stood were broad laving basins of ornate yellow and green tile. Each basin had its rack of towels. It was the custom, the housekeeper had explained, for guests as they entered to dip their hands ceremoniously into a basin, slop several cups of water onto the floor, dry their hands on a towel and fling the towel into the growing puddle at the door. After the dinner, beggars gathered outside to get the water squeezings [sic] from the towels. (p. 206)

This waste is contrasted by the frugality of the indigenous people of Arrakis—the Fremen. A people who have adapted to the wilderness around them, they conserve water religiously through whatever means possible, such as recycling their bodily waste (via specially manufactured garments known as *stilsuits*), storing water in secret underground caches, and reclaiming the water back from their dead for the tribe (Herbert, 1965, p. 222). All are sustainable practices ingrained and integrated into their traditions and lifestyles. To the Fremen, the only thing a person possesses is that tribe-member’s flesh; even the body’s water must be returned to the tribe (p. 503). The offering of your body’s water, such as shedding tears for the dead (p. 509), is considered the highest honor that can be given to the deceased.

With the continuous parallel between water and spice, wealth and poverty, waste and conservation, Herbert challenges the reader to examine his or her own life and to see the bounty that the reader truly possesses—not just financial wealth. Caladan possesses limitless water and yet is viewed as a poor planet because it lacks much in the way of profitable exports, whereas the rulers of *Arrakis* possess great monetary wealth, yet dwell in endless sand-seas (Herbert, 1965, p. 68), not to mention the constant fear of thirst and starvation (p. 101). In a world like ours where, to the wealthy, the most valuable resources are not the ones that sustain life but instead are the ones that make it more comfortable for affluent, it is evident how *Dune* sends a clear statement about the critical issue of water conservation that humans are facing over the next millennium.

One of my favorite quotes from the novel illustrates what I believe is Herbert’s underlying belief about the balance of nature and humanity’s role in it. “He recalled

another thing the old woman had said about a world being the sum of many things—the people, the dirt, the growing things, the moons, the tides, the suns—the unknown sum called *nature*...(Herbert, 1965, pp. 51-52).” Humans are not meant to be the sum of the world, only a part of the world. While the Earth is not yet a barren wasteland, Herbert offers us an insight into what the world will become if the acquisition of resources such as oil, metals, gems, and precious minerals is pursued by the wealthy without thought to the consequences for the rest of the world. It is the responsibility of all those in power to consider the impact their choices and desires will have the world over, and remember that humanity and its greed is not the sum of the world, but only a part.

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# Echoes of Our Past

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## ABSTRACT

This article is a brief overview of *Collapse: How Societies Choose to Fail or Succeed* by Jared Diamond. In his book, the author makes a comparative argument about the effect human impact on the environment has on the success or failure of a civilization. He examines past and current societies using case studies to discuss social history, social change, and environmental impact.

The historical and scientific details packed into this book help to demystify ancient cultures including Easter Island, and his delivery invokes images of their lives. He solidifies his compelling argument by focusing on current world trade and environmental policies.

## The Book

The sun heats abandoned monolithic human figures as they lay strewn over a heaving, treeless landscape. What was once a subtropical rainforest and habitat to the world's largest palm trees, which are now extinct, Easter Island is now only hospitable to grasses, sedges, low ferns, and shrubs. What could have caused such a dramatic change to the island's landscape? The devastation is attributed to gradual deforestation by the original inhabitants; clear cutting for gardens, for fuel, and for building materials (Diamond, 2005, pp.102-107). Easter Island's landscape and history hold critical lessons about the way humans exist on the earth, and how that existence may affect our survival.

Are we doomed to repeat the same mistakes as our predecessors or can we learn from them, before we have affected the face of the entire planet?

Jared Diamond (2005), a professor of Geography at the University of California, Los Angeles, California, (Biography, 2004) seeks to answer this question in his book, *Collapse: How Societies Choose to Fail or Succeed*, as he explores the contributing factors that lead to the collapse of some of the most powerful societies in history, while also examining the effects of current societies that exist, in both developing and developed countries.

Beginning the project, Diamond (2005) admits to having “a naive idea that the book would just be about environmental damage” (p. 11). Realizing that he did not “know of any case in which a society’s collapse can be attributed solely to environmental damage: there are always other contributing factors” (p. 10) and acknowledging that “It’s not true that all societies are doomed to collapse because of environmental damage: in the past some societies did while others didn’t; the real question is why only some societies proved fragile, and what distinguished those that collapsed from those that didn’t” (p. 10).

These observations lead the author to create a five-point framework of potential contributing factors: 1) environmental damage, which is the damage that societies often unconsciously inflicted on the environment, 2) climate change, which although is currently related to global warming, there is a natural occurrence of temperature change to become hotter or colder, wetter or drier, which does not relate to human activity, 3) hostile neighbours, each society is at risk of warring neighbours, and environment can help a society hold out long enough to fend off their attackers or buckle from the effects of a weakened environment, 4) the lessened support of friendly trade partners, which focuses on the problems that arise from neighbouring enemies when there is a decline in support from allies, and 5) the individual society’s response to its environmental problems, which always proves to have the greatest effect (pp. 11-15).

With a background in physiology, biology and biogeography, Diamond (2005) has published over two hundred articles and has won numerous awards, including the Tyler Prize for Environmental Achievement (Biography, 2004). He is recognized for his “novel theories relating species extinction rates to habitat size [that have] helped give birth to the discipline of conservation biology” (Brown, 2009, para. 1).

His knowledge and experience are evident in his work, as he mingles science and history to create a vivid image of the lives of past civilizations. In doing so, he provides

a striking look into the parity between the life patterns of past societies and present societies. Beginning with an exploration of the state of Montana, United States, and its environmental and economic challenges (pp. 27-76), Diamond (2005) addresses how those challenges have been and continue to be affected by the past and present actions of the citizens and government.

Moving through an exploration of the social culture, surroundings, and general lives of the past societies, the author takes readers to ancient Polynesia (Diamond, 2005, pp. 79-135) the Anasazi of Southwestern United States (pp. 136-156), and the powerful Maya (pp. 157-177), before ending with the Greenland Norse (pp. 178-248). Combining his own depth of knowledge with the work of other experts, Diamond addresses the issues that lead to the collapse of a particular civilization, and also provides answers to puzzles of many of the cultures, such as the stone monoliths of Easter Island and the fate of its inhabitants, which have mystified many for centuries.

Diamond (2005) then compares the actions of past and present societies in Haiti and The Dominican Republic (pp. 329-357), before moving focus to Rwanda (pp. 311-328). These developing countries provide a sobering look at the cyclical relationship between social policies that lead to negative effects on the environment and the dramatic social consequences of those environmental effects, such as the population explosion in East Africa. Rwanda is one of the most densely populated countries in the world.

. . . the growing population [of Rwanda] was accommodated just by clearing forests and draining marshes to gain new farmland, shortening fallow periods, and trying to extract two or three consecutive crops from a field within a year. . . . Friends of mine who visited Rwanda in 1984 sensed an ecological disaster in the making. The whole country looked like a garden and banana plantation. Steep hills were being farmed right up to their crests. Even the most elementary measures that could have minimized soil erosion, such as terracing, plowing along contours rather than straight up and down hills, and providing some fallow cover of vegetation rather than leaving fields bare between crops, were not being practiced. (pp. 319, 320)

The resulting effects are visible on the landscape. The meagre grass in the pastures is grazed closely by livestock and erosion gullies carry muddied water from freshly stripped pastures (p. 311).

The practice of over-farming stripped the land, notes the author, creating a dire situation. An increasing number of people became impoverished, hungry, and desperate.

These factors, bolstered by land disputes, created the circumstances under which people of the region fell vulnerable to the ideas of radical leaders, which quickly fueled the 1994 genocide under the guise of religious differences (pp. 317-328).

Providing a particularly interesting and significant view of the potential issues developed countries may face in the future, Diamond (2005) focuses on Australia (pp. 378-416). A developed country, whose issues are not yet as acute as those seen in many developing countries like Haiti and Rwanda, and not at immediate risk of collapse, is facing issues including human-made droughts, water shortages, and salinization. If humans remain on the current path, the effects that are being seen in Australia have equally damaging potential. Australia's problems also put light on the fact that environmental issues do not only arise in countries with uneducated, impoverished populations and corrupt governments.

Diamond (2005) provides evidence from both past and present societies to urge readers to heed the lessons they present. He also encourages readers to see the hope and inspiration each provides regarding environmental management, sustainable living, and regulating population. Is history destined to repeat itself, or can we learn from our mistakes? If we are to learn from once thriving cultures that exacted their own demise, Diamond suggests we consider adapting a slower pace of life, and reducing our carbon footprint, and our chemical utilization. As humanity approaches a crossroads, and we contemplate whether or not to heed the advice of Diamond, we are faced with a critical question: Will we ensure that we do not blindly repeat history?

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## *To the Arctic, For the Arctic*

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The Earth does not speak with words like humans do. But it does communicate—if only humans would stop, look, and listen to the sights and sounds that Earth presents us. In our society, a myth still exists in many quarters that *global warming* is not real. Many people believe that myth, such as Fox News commentator Sean Hannity, who told viewers “[Vice President Al Gore] doesn’t think there’s room for debate on climate change. I do. The debate’s over. There’s no global warming” (as cited in Media Matters for America, 2011). These people are averting their eyes, closing their ears to the evidence. *To the Arctic* (Judson, MacGillivray & MacGillivray, 2011), the new documentary in IMAX format, which stands for Image Maximum, “a motion picture



Figure 1: Arctic ice

Source: <http://www.imax.com/tothearctic/site.html#>

format with the capacity for greater size and clearer resolution than standard movie systems” (Tech-FAQ, 2012), reveals the verifiable impacts of global warming on the Arctic so that humans can see and hear them up close. Once we have seen and heard these sights and sounds, perhaps we will finally heed the message in them.

*To the Arctic*, directed by Greg MacGillivray and produced by his son Shaun MacGillivray, is a visually stunning film. It is also emotionally stunning. It is a must-see for anyone who doubts that global warming is real. Narrator Meryl Streep takes us to the Arctic to present its landscape and climate, which is changing so quickly that “if you look at NOAA’s [National Oceanic and Atmospheric Administration] reports from satellite,

you see how it has changed every year, getting less and less ice during the summer in the polar ice cap.... where we went, 25 years ago, there would have been tons of ice. Now there isn't that much" (S. MacGillivray, in Loose, 2012).

The film's overhead shots of deep cracks in the ice shelf through which melt water rushes and then gushes over the edge in dozens upon dozens of waterfalls leaves no doubt about the impact of warming on the ice. Greg MacGillivray explains, "The ice cap is melting from both the top, due to the sun, and from the bottom because the ocean is warming. Because the ocean is dark, relative to the ice, it absorbs the sun's heat" (G. MacGillivray, in Loose, 2012). The rushing water is the Arctic's cry for help.

This film shows us the Arctic's increasingly endangered wildlife. Although we see cavorting caribou and wallowing walruses, the spotlight is on polar bears, specifically a mother polar bear and her two cubs, less than a year old. Phenomenally, this polar family allowed the IMAX crew to shoot footage of them for nearly a week, offering audiences a rare prolonged look at their habits and habitat. Some of the most entertaining and engaging film footage shows the bears playing with the various camera-hiding devices the crew used to disguise their equipment. Like young children overcome by curiosity, the bears were intrigued and treated the camouflaged tools like toys, eventually cracking at least one of the canisters open to check what was inside.



Figure 2: The polar bear family featured in the film  
Source: <http://www.imax.com/totheartctic/site.html#>

While the film certainly has its endearing moments filled with laughter, loved by adults and children alike, it is also filled with suspense. In one distressing sequence, the mother bear and her cubs are stalked relentlessly by a lone adult male polar bear, willing to hunt and eat the vulnerable cubs because his own food sources are shrinking due to global warming. "The polar bear requires sea ice to hunt its primary food source, the ringed seal," (IMAX, n.d., Curriculum Guide, p. 8); less ice, therefore, means less food. Viewers' emotions are torn between hope that the cubs survive and sympathy for the adult male who is hungry and in danger of dying from lack of food. The conflict is

upsetting; it also illustrates the myriad ways that animals in the Arctic are at risk from the warming climate.

*To the Arctic* is also full of despair. The beautiful, barren footage is all the more poignant because global warming is slowly destroying the habitat of these unique creatures—the habitat they were built for and the only one they can survive in. Although polar bears are adapted to life in this environment, “survival is a task made more formidable by the stress of a disappearing habitat” (IMAX, n.d., Curriculum Guide, p. 3). Viewers are immersed in a majestic, fragile splendour that we cannot help but realize may one day cease, perhaps in our lifetimes. The realization is cruel and crushing.

Although this film has moments of tension, its imagery and content is suitable for school-aged children. In truth, parents should accompany their children, and teachers should arrange trips for their students to see this film. It teaches necessary lessons about global warming in a way everyone can understand and opens an avenue for discussion after the film ends. Since children will make our society’s choices in the future, this meaningful conversation is a crucial one to begin now.

Although many scientists are studying the wildlife of the Arctic, such as Dr. Steven C. Amstrup of Polar Bears International (2012) and Dr. Steve Ferguson of the Freshwater Institute Science Laboratory (Fisheries and Oceans Canada, 2009), no one currently knows with certainty what the future holds for the animals of the Arctic. We can only speculate what will happen if warming in the region continues at its current pace of “twice as fast as everywhere else on the planet” (G. MacGillivray, in Loose, 2012). The producers of *To the Arctic* have given us grim glimpses of what the world may experience; they have provided the lens through which we can see the bleak images and the soundtrack through which we can hear the straining sounds of global warming’s impacts on this beautiful northern land. Through what the Earth is showing us in the Arctic, she is speaking to us, asking for help. Will we heed the call?

To view the official movie trailer for *To the Arctic* you can visit the following website: <http://www.imax.com/tothearctic/site.html>

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