



Inquiry@Queen's

2nd Annual

Undergraduate
Research Conference

Program

March 6 & 7, 2008

Queen's Learning Commons,

Stauffer Library

iatq.ca

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March, 2008

Dear Conference Participants,

With the second annual conference showcasing undergraduate inquiry, I invite you to celebrate the achievements of students from across Queen's. The fruits of their inquiry have come from courses, senior theses and design projects, and from independent research efforts. Presenters have been supported in their efforts by fellow students, teaching assistants, faculty, the Queen's Learning Commons, and the Centre for Teaching and Learning.

Inquiry@Queen's is more than a conference; it is an approach to learning that focuses on discovery and scholarship, the things that are the very essence of this University.

I extend my congratulations to all of you who have participated and my thanks to all who have helped in bringing this most valuable activity to fruition.

To those of you who are picking up this *Inquiry@Queen's* program – I encourage you to read the abstracts and revel in the breadth and depth of student achievement.

Karen R. Hitchcock, PhD
Principal and Vice-Chancellor

CONFERENCE AGENDA

Thursday, March 6, 2008

Speaker's Corner, Queen's Learning Commons, Stauffer Library

- 9:00 Coffee
- 9:30 Opening Remarks
Welcome from the University:
Dr. Joy Mighty, Director, Centre for Teaching and Learning
Keynote Address:
Research as Activism (Whether You Like it or Not), Dr. David McDonald, Director, Global Development Studies
- 10:15 Session I: Perception & Self-Perception
- 10:15 Session II: Quality of Life and Health (Room 121, Stauffer Library)
- 11:00 Session XIII: Poster Presentations (Queen's Learning Commons, Stauffer Library)
- 11:45 Brown Bag Lunch with Principal Karen Hitchcock, *Responsible Citizenship: Implications for the Curriculum*
Sponsored by the Centre for Teaching & Learning
- 1:15 Session III: Energy: Its Implications
- 1:15 Session IV: Conflict and Resolution (Room 121, Stauffer Library)
- 3:15 Nutrition Break
- 3:30 Session V: Water – 21st Century Oil
- 3:30 Session VI: Ideas in Motion (Room 121, Stauffer Library)
- 5:00 Inquiry@Queen's Reception, Fireplace Reading Room, Stauffer Library

Remarks:

Paul Wiens, University Librarian
Kimberly Woodhouse, Dean, Faculty of Applied Science
Alistair MacLean, Dean, Faculty of Arts and Science
Keynote: *Getting to research by coincidence*, Anne Petitjean,
Assistant Professor and Queen's National Scholar, Department of
Chemistry

Door Prizes!

Friday, March 7, 2008

Speaker's Corner, Queen's Learning Commons, Stauffer Library

9:00	Coffee
9:30	Opening Remarks
9:45	Session VII: Time-Space-Place
9:45	Session VIII: Communication (Room 121, Stauffer Library)
11:20	Session IX: Hunger (Room 121, Stauffer Library)
12:30	Lunch
1:00	Session X: In Community
1:00	Session XI: Brave New Binary World (Room 121, Stauffer Library)
2:45	Nutrition Break
3:00	Session XII: Seeking Redemption
4:15	Closing Remarks
	Door Prizes!

ORAL PRESENTATIONS

Session I: Perception & Self-Perception

Speaker's Corner, Queen's Learning Commons, Stauffer Library

Thursday, March 6, 10:15-11:45

Moderator: Dr. Jenn Stephenson, Drama

Mechanisms for Conscientiousness: Accessibility and Sensitivity to Self Discrepancies

Presenter: Faye Ling, Psychology

Faculty Supporter: Dr. Lee Fabrigar, Psychology

Two research studies are presented which investigate the possible psychological mechanisms underlying conscientiousness. Study 1 is designed to test the hypothesis that self discrepancies are more accessible for those who are higher in conscientiousness than those who are lower in conscientiousness. This is indexed by response latencies to answering computer prompts of self concept and self guides. Study 2 is designed to investigate the hypothesis that those who are more conscientious are more sensitive to self discrepancies (i.e. experience greater anxiety) than those who are less conscientious. This hypothesis is tested by asking participants to report their self concepts and self guides, making their self discrepancies salient by recording specific incidents and then measuring their anxiety level.

Contextual Influences on Attributions of Racial Discrimination in Organizational Work Groups

Presenter: Brent Lyons, Psychology/ Business

Faculty Supporter: Dr. Jana Raver, Business/Psychology

I will assess how contextual characteristics of work groups, along with one's race, influence employees' tendencies to attribute negative job outcomes to racial discrimination. I hypothesize that employees who are passed over for promotion are more likely to make attributions of discrimination when they are a racial minority (Asian), their race is numerically underrepresented in the group, and the person promoted instead is of a different race. When their race is numerically underrepresented, Whites make more discriminatory attributions than Asians. When equally represented, Asians make more discriminatory attributions. Finally, Asians and Whites will not differ in their discrimination attributions when the promoted individual is of the same race, but Whites have higher attributions when he/she is of a different race.

Sexual relationships and self-esteem: Why do Women Get the Short-End of the Stick?

Presenter: Morgan Craig-Broadwith, Psychology

Faculty Supporter: Dr. Vernon Quinsey, Psychology

My study will investigate sex differences in the relationship between number of sexual partners and self-esteem. Previous research has found a moderate positive relationship between number of sexual partners and self-esteem in men, while finding a strong negative relationship in women. Women who engage in more short-term sexual relationships are left feeling vulnerable, depressed, and have lower scores of self-esteem. Men on the other hand, appear to have an ego boost with the more short-term sexual partners they have. Why is this? My study, using an evolutionary psychological perspective, will investigate the relationship between number of sexual partners and self-esteem in hopes of piecing together why men and women are affected so differently.

Empowering or Oppressive? Breast Implants as a Dialogue

Presenter: Jenna Bot, Philosophy
Co-Presenter: Elana Finestone, Women's Studies/Psychology
Faculty Supporter: Dr. Christine Overall, Philosophy

For this dialogue, the authors propose to examine the topic of cosmetic surgery, specifically breast implants, and its implications. Our focus is to answer the question, "Is undergoing cosmetic surgery a mode of oppression or empowerment for women?" In order to gain some further insight into the matter, the authors set up a fictional situation. In this situation, two women, Elizabeth and Natalie, engage in a conversation about a famous female celebrity on the cover of a popular beauty magazine. This particular celebrity has just undergone breast augmentation surgery. Elizabeth and Natalie have very different opinions regarding this celebrity's decision to get implants. This paper is a discussion of whether it is possible for women's choices regarding cosmetic surgery to be free from 'coercion', the definition of 'power', and the price and privileges of achieving 'beauty'.

Desperate Housewives and Soccer Moms: Examining the relationship between media representations and the lived reality of women in the suburbs

Presenter: Jessica White, Geography
Faculty Supporter: Dr. Leela Viswanathan, Geography

Has suburbia ever truly met the needs of the populations it claims to serve? Since its creation suburbia has been a centre of conflict between the image created by the media and lived realities. The post war images of femininity in the suburbs were ones of domesticity and a heteronormative family. In essence the "sitcom" family was created and reality was made to look like its television counterpart. Yet in real life, did any family look like that of *Leave it to Beaver*? Have our ideals of the perfect family living in the perfect house truly changed? If they have changed have they had an effect on policy makers and land developers? A brief historical examination of suburbia, its creation, and media images will be contrasted with the developments and policies we find in today's suburbia. To partially answer my original question the demographic of women in suburbia, more specifically mothers will be discussed. Are today's media images of suburbia a better depiction of lived realities or are urban political processes still at play to perpetuate an ideal image?

Session II: Quality of Life and Health

Stauffer Library 121, Queen's Learning Commons, Stauffer Library

Thursday, March 6, 10:15-11:45

Moderator: Bob Burge, Director, JDUC

Developing a Mathematical Model of Foot and Mouth Disease

Presenter: Mike Delorme, Biology/Math

The outbreak of foot and mouth disease in the UK during 2001 resulted in the death of over 6 million animals and an economic loss of approximately \$14 billion. Understanding the dynamics of the disease is important for preventing or managing future outbreaks. Several susceptible-infected-recovered (SIR) models were formed and examined as a result of work completed during the PIMS Mathematical Biology Summer 2007 Workshop at the University of Alberta. The model development starts with the most basic disease dynamics and goes to include the effects of vaccination and patterns generated by early disease detection. This presentation will also include a brief discussion of herd immunity and Canadian disease management policy.

Is Inclusion for All? A Presentation on a Literature Review of Teacher and Student Perception on Inclusive Education

Presenter: Gary Wu, Chemical Engineering

Faculty Supporter: Dr. Kevin Parker, Psychology

The adaptation of inclusive education is changing the way in which students with special educational needs are taught in various parts of the world. This educational reform was based on social justice goals and on effectiveness studies, yet the outcomes of newer studies raise questions regarding the adequacy of the feedback received from educators and students concerning the effectiveness of inclusive education. This inadequate or distorted feedback may interfere with the development of modifications to inclusive education, which could improve a student's education and quality of life. This paper will present a literature review of post-1999 literature on educator and student perception of inclusion within their educational institution, and in the process, examine factors that affect educator's expressed opinion of the inclusion reform. It also examines the social and academic impact of inclusion on special education need students, and briefly explores the state of modern special schools. While most educators report a positive attitude towards inclusion, they are less inclined to support the concept of "full inclusion", and cite a variety of personal, student, and environment related problems associated with the inclusive classroom. Innovative strategies such as in-class collaboration were found to be effective in promoting academic and social progress for all students in inclusion. Schools that failed to make adjustments to teach the prescribed curriculum after adopting inclusion resulted in low social development for special needs students. A summary of the limitations to inclusive research, and recommendations for future reforms to inclusion, will also be presented.

How Do the Better Educated Earn More? Evidence from Rural China

Presenter: Ying Feng, Mathematics and Statistics

The question of whether or how education affects income is a basic concern for economists and policy makers. The fact that education improves one's living perspectives is also a strong argument for undertaking substantial schooling investment in the developed and developing worlds. All these initiatives point to a more fundamental question: How do the better educated earn more? This study seeks to understand this question by drawing on the experience of policy reforms in rural China. In particular, I estimate the net profit function of rural households using China Household Income Project in 2002. I find strong support that education is rewarded through affecting households' allocation of labor and investments. It is estimated that an additional year of education is associated with 2.54 percent increase in net profits: 1.1 percent comes from better allocation of labor; 0.35 percent comes from better utilization of investment; 1.09 percent is due to the direct impact of education on earnings. The study has potentially important policy implications for completing China's economic reforms in that education is a crucial element. It also mirrors the experiences of other developing countries and shed light on how schooling should be financed: focusing on a few rather than universal provision may have a more profound impact on earnings.

Assistive Seatbelt Device

Presenter: Andrew van Warmerdam, Applied Science

Co-Presenters: Sara Buckner; Dylan Johns; Alanna Travis, Engineering

This assistive seatbelt device is to help people who are having trouble buckling and unbuckling their seatbelts. These people may include the elderly, individuals with arthritis or back or shoulder injuries just to name a few. It makes it easier for them to accomplish these tasks. It is a simple design which makes it easy to operate as well as manufacture. Due to its use of already existing materials, the device would be affordable to produce and for clients to purchase. This device is a small object that is easily installed. All the user needs to do to install is to insert it into the seatbelt buckle and then it is ready to be used. Since is easy to install, it is also easy to transport it from car to car.

Accelerated Aspirin Degradation in Pill Organizers

Presenter: Amir Rumman, Life Sciences

This aim of this study was to survey the rate of accelerated degradation of coated and uncoated aspirin tablets stored in pill organizers (POs). POs are multi-compartment boxes that patients commonly use to sort pills, especially if the medication regime is complex. The use of POs involves removing the pill from its original package and placing it in the compartment for extended periods of time. Although an effective sorting tool, POs might allow accelerated degradation of the drug since medications are subjected to more light, humidity and temperature. Degradation of medications entails many health hazards and concerns, hence the importance of assessing the rate of formation of degradation by products. A 31-compartment PO, which is commonly used at local retirement houses, was investigated. It is typically placed in a drug cabinet inside a bathroom. Aspirin degrades by hydrolysis to form salicylic acid, which causes stomach irritation. pH titration of aspirin tablets in PO and in original packaging was used to qualitatively establish that aspirin undergoes accelerated degradation in POs placed in bathroom drug cabinets. The percentage of free salicylic acid in coated and uncoated aspirin tablets was measured using high performance liquid chromatography (HPLC). %SA in uncoated tablets reached 1.503%, which is five times above the USP limit of 0.30%. Uncoated tablets reach the maximum limit after 18 days of storage in PO. Coated tablets remained within the prescribed USP limit of 3.0%. The findings of the study established that storing aspirin pills in POs for extended periods of time is an inappropriate practice as it accelerates the rate at which tablets undergo hydrolysis degradation.

Session III: Energy: It's Implications

Speaker's Corner, Queen's Learning Commons, Stauffer Library

Thursday, March 6, 1:15-3:15

Moderator: Dr. Tom Harris, Chemical Engineering

The Assessment of Oil Sand Conditioning Using Droplet Size Analysis

Presenter: Alex Burns, Mining Engineering

The transportation of oil sand via slurry pipeline reduces downstream processing costs because some separation of bitumen from the sand/clay matrix occurs during transit (conditioning). However, there is currently no real-time method for assessing the extent of conditioning inside a pipeline. We investigated bitumen droplet size analysis as a technique for determining the extent of conditioning in a slurry line by conducting field tests at Syncrude Canada Ltd.'s oil sand operation in Fort McMurray, Alberta. Slurry was withdrawn from two different pipelines at five specially designed sampling stations and the liberated bitumen droplets were allowed to float through a water-filled viewing chamber. The droplets were videotaped and analyzed using particle sizing software to determine the average droplet size and shape. This data was correlated to feed grade, slurry temperature and transport distance to determine if a relationship existed between the physical slurry properties and the droplet data. Results suggest that droplet size analysis can be used to assess the extent of conditioning inside an oil sand slurry pipeline in real time. This technology could be incorporated into the control scheme of an oil sand processing circuit to improve separation efficiency and reduce costs.

Carbon Sequestration: an Answer to the World's Carbon Dioxide Emission Problem

Presenter: Curtis Wettstein, Mining

Faculty Supporter: Dr. Vicki Remenda, Geological Sciences and Geological Engineering

As of November 2007, 174 parties had ratified the Kyoto protocol signifying a large part of the solution to one of the worlds primary environmental problems; carbon dioxide emissions. Although the United States refused to sign the protocol, their neighbours in Canada were eager to address the issue and sign. However

with oil being a major Canadian export, carbon dioxide emission reduction was arguably improbable and unprofitable. With the pressure of reducing carbon dioxide emissions an imminent, carbon sequestration may be the symbiotic solution in satisfying Kyoto, saving the environment and even increasing profitability. Carbon sequestration is the process where carbon dioxide is injected into an oil well in order to increase recovery. With tertiary oil recoveries driving much of the oil business, cheap and efficient recovery methods are invaluable. Presently there is a Canadian operation in Wayburn, Saskatchewan which employs the technique. In addition, Texas and Scandinavian oil companies are using Carbon dioxide injection. If carbon sequestration increases oil recovery it has to be the preferred method. By purchasing carbon dioxide from external sources and recycling their own, companies can reduce emissions while increasing profits. Finally it may be profitable to save the environment.

Investigation into Feasibility of Low-Enthalpy Geothermal Electricity Production in Hinton, Alberta

Presenter: Gordon Foo, Geological Sciences and Geological Engineering
Co-Presenters: Matt Douglas, Trevor Wasik, Sam Friley, GSGE
Faculty Supporter: Steven Rose, Geological Sciences and Geological Engineering

The aim of this study is to demonstrate the feasibility of electrical power generation from deep, low enthalpy geothermal resources surrounding Hinton, Alberta. Relict petroleum industry well infrastructure permits access to aquifers and water reservoirs up to 6000m deep, where heat from radioactive decay in the Earth's interior imparts sufficient thermal energy in formation water to mechanically drive a turbine at surface. The thermal energy is converted to mechanical energy through a binary fluid cycle, where the heat in the formation water is transferred to a working fluid that vaporizes at a low temperature and engages a turbine. The heat-deficient formation water byproduct is recycled back into the aquifer, where it regains its thermal energy for subsequent exploitation. The closed-loop design of this system makes the resource renewable, sustainable and imparts a lower environmental impact than conventional methods of electricity generation. Rising energy prices and a growth in public interest for renewable energy resources have made geothermal electricity generation and heating an attractive target for further research and development in Canada. The study area, Hinton, Alberta is situated over an aurally limited geothermal heat anomaly in the Western Canada Sedimentary Basin. Public-domain geological data released by the petroleum industry, combined with currently developed geothermal mechanical technologies are used with to construct a hypothetical model for 1MW of electricity generation. Results are forthcoming.

Smothering the Embers of Conflict in Darfur: Transnational Oil Politics

Presenter: Ira Goldstein, Political Studies
Faculty Supporter: Dr. J. Andrew Grant, Political Studies

It is not an easy feat to identify the origins of conflict in Darfur. It is a conflict so complex that one scholar can blame global warming while another blames a "genocidier" in Sudanese President Omar al-Bashir, and both have solid evidence for their case. The obvious factor that led to the Darfur conflict is past conflict in Sudan. The embers of past conflict were still glowing hot in Sudan when the Comprehensive Peace Agreement (CPA) was signed between North and South in 2005 to end the civil war. Interestingly, the final years of civil war and the first years of conflict in Darfur coincide with increased oil development in Sudan. The issue of oil and conflict in Sudan is important because it involves the actions of corporations, investments of ordinary citizens around the world and the policies of governments. Part of the policy dialog surrounding Darfur and the lack of government-guaranteed human security relates to Sudan's oil revenues and their connection to military spending. Certain NGOs have endeavoured to draw a direct link between increased oil revenues and military spending in Sudan, urging investors to divest from certain companies to alleviate suffering and conflict. Queen's took steps last year to drop investments in certain Chinese oil companies because of their involvement in Sudan. This presentation will: examine the link between oil revenues and military spending in Sudan, explore the efficacy of divestment and other economic sanctions and draw some conclusions on the role of corporations (and their investors) in conflict zones.

Sustainable Development in the Northwest Territories: Rhetoric or Reality? An Eco-Socialist Examination of the Proposed Mackenzie Gas Project

Presenter: Daniel Wong, Global Development Studies

Faculty Supporter: Dr. Mark Hostetler

This presentation will address the central question - can we balance sustainability and economic growth in the Northwest Territories (NWT) within the framework of capitalist development? The proposed Mackenzie Gas Project will have enormous implications for the people and land in the NWT; thus, it is important to understand the process and politics behind its environmental assessment. With a price tag of \$7 billion and the largest “development” in the history of Canada’s north (Wright Mansell Research Limited) – it would fragment intact boreal forests along the Mackenzie River, Canada’s wildest big river, and damage habitat for species such as woodland caribou and grizzly bear (Wildlife Management Advisory Council). The proposed project will double the NWT’s greenhouse gas emissions (Pembina Institute), and it is slated to fuel further development of Alberta’s tar sands, which produces the most damaging type of oil for the global atmosphere, through another pipeline to Fort McMurray (First Energy Capital Corporation). Other questions to be explored include how the oil and gas lobby influences the policy-making of the Government of the Northwest Territories and Aboriginal self-governments and organizations; is the Joint Review Panel independently reviewing the environmental, social and cultural impacts of the proposed Mackenzie Gas Project, according to its mandate, and, what are the opportunities for and challenges facing environmental non-governmental organizations and citizen resistance to the proposed Mackenzie Gas Project?

The Queen’s Residence Energy Challenge

Presenter: Maryam Adrangi, Environmental Geology

The Queen’s Residence Energy Challenge (QREC) is an energy conservation initiative taking place in the residence halls at Queen’s University coordinated by the AMS Sustainability Office and the Sustainability Coordinator for Student Affairs. It is a two-part competition. Part one of the competition is an inter-residence competition in which each residence hall will be competing to reduce their energy expenditures. Energy use will be compared to the corresponding time in the previous year, and the residence that reduces their energy use by the highest percentage will win the competition. This part of the project is being organized by members of the AMS Sustainability Office and the Sustainability Coordinator (Office of Student Affairs), and Residence Life staff and floor dons are helping execute it. The second part of the competition is an inter-university pledge drive, in which residents will be encouraged to sign a pledge stating that they will be participating in the QREC. Queen’s will be competing against the Universities of Waterloo and Guelph, and the school that has the highest percentage of residents participating will win a set of solar panels as a symbol of energy conservation and renewable energy. This part of the project is being coordinated by the Sierra Youth Coalition who has obtained funding from the Ontario Power Authority. The goals of the QREC are to reduce overall energy use in the residences, help students living in residence learn about their own energy consumption and ways to reduce it, and create a culture of sustainability at Queen’s. In this presentation I will go through the overall timeline of executing and planning the project, provide examples of ways to reduce energy consumption in residence, and provide results of both parts of the competition.

Session IV: Conflict and Resolution

Stauffer Library 121, Queen's Learning Commons, Stauffer Library

Thursday, March 6, 1:15-3:15

Moderator: Dr. Jill Scott, German

Salvation Through Roots and Hybrids? The Governance of Humanitarian Intervention and Aid

Presenter: Christine A. Willner, Political Studies

Faculty Supporter: Dr. Andrew Grant, Political Studies

The ongoing conflict, political instability, and social consequences of the wars in the Democratic Republic of Congo (DRC) have historically been ignored by the international community. Although seemingly complex, personally observed local solutions to domestic and regional issues are currently providing examples of effective programs which could become blueprints for other communities, regions, and potentially the state. This presentation will provide an overview of the history, current situation, and actions of the United Nations (UN), non-governmental organizations (NGOs), and citizenry in order to challenge perceptions surrounding the ongoing conflict. The first section provides a brief outline of the history of the DRC since independence including: political actions, UN, and external state interventions. The second section will examine the role of NGOs in the country – both theoretically and practically – in order to clarify the challenges NGOs face and how these challenges could be overcome, improving the outcome of aid offered to the people of the DRC. The third section will suggest the potential for grassroots, or “bottom-up”, change based on political theory and how such change could be implemented given recent developments in the country. The fourth and final section will discuss recent developments socially and economically in the DRC using recent field research. The presentation will conclude with a critical analysis, propose some potential outcomes of UN actions, and offer recommendations given knowledge gained from academic and field research specific to the Democratic Republic of Congo.

From Lip Service to Neglect: the Evolution of Canadian Foreign Policy and the Genocide in Darfur

Presenter: Samuel Yorke, Political Studies / Economics

Faculty Supporter: Dr. Kim Richard Nossal, Political Studies

The purpose of this essay is to examine the evolution of Canada's policy in response to the Darfur genocide since 2003. In this light, this essay will first outline Paul Martin's policy during his prime ministership and then analyze Prime Minister Stephen Harper's policy since his election in 2006. This examination will demonstrate that a considerable divide occurred in Canadian foreign policy during Martin's prime ministership. Martin's rhetoric concerning Canada's contribution to stopping the Darfur genocide became so exaggerated that it was impossible for government action to accommodate. By contrast, although Harper's limited action in sending financial aid and military expertise to Darfur mirrors that of his predecessor, Harper has effectively taken the air out of Martin's inflated rhetoric. Harper's reluctance to publicly address Canada's response to the Darfur genocide represents a divergence from the trend in contemporary Canadian foreign policy; in other words, Harper's rhetoric matches his government's action. Why the drastic change? As this essay will argue, Harper's deflated rhetoric on the Darfur genocide is the by-product of his strategy to focus his foreign policy message on missions that will achieve the most political points at home, namely, militarizing the Afghanistan war, ensuring closer ties with the United States, satisfying the Canadian Forces, and defining himself in relation to the previous and present Liberals as a decisive leader. In short, Harper has largely neglected the Darfur genocide in order to position himself as a decisive leader concerned with issues of peace and security instead of issues of development and human rights.

The Canadian Response to China's Rise

Presenter: Graham Dalik, History

Faculty Supporter: Dr. Emily Hill, History

Since the establishment of diplomatic ties between Canada and the People's Republic of China (PRC) in 1970, Canada has been concerned both with upholding political principles and with the pursuit of economic goals in interactions with China. Dramatic changes associated with China's transition from Soviet-style central planning to a new system of authoritarian capitalism have redefined the two aspects of the Sino-Canadian relationship. It has been argued that Canada has been ineffective in formulating and pursuing a China policy during this period of transformation, failing to capitalize on the advantage of an early recognition of the PRC. For instance, in his book *Pacific Challenge* (1986), Eric Downton described Canada's inattention to China as a "Pacific blind spot." This research follows two methods to investigate whether this is in fact an accurate appraisal of Canada's China policy past and present. Interviews conducted in China with Canadians engaged in business and public affairs are complemented by an extensive review of scholarly work. The findings suggest that Canada's China policy has been constrained by the structure of the Canadian economy and by concerns over public opinion. In addition, Canada has adapted slowly to China's transformation because of strong commitments to established economic and cultural ties to the United States and Europe.

Ethnic Conflict: A Political Analysis of 1437 Transylvania

Presenter: Heather Sarsons, Economics

Transylvania was, in 1437, a political community in which the interests of only a select few were represented. The definition of who belonged to the political community had a large impact on whose interests were reflected in the laws and policies that were set at the time. The presence of three distinct ethnic groups, the Romanians, the Magyars, and the Saxons, complicated this definition and, in consequence, whose interests would be represented. Although both were ethnic minorities, the Magyars and the Saxons held the majority of the political power in 1437 (Domonkos, 1983). Cultural friction between the Magyars and the Romanians resulted in the Magyars using their positions to deny the Romanians participation in politics, thereby preventing the Romanian culture from having any influence in Transylvania (Otetea, 1985). This paper examines the effects that the deprivation of political representation for the Romanians had on the political structure, laws, feudal obligations, and conscription policy in 1437 Transylvania and how this deprivation influenced the Babolna Peasant Revolt of 1437. Specifically, the Magyars were able to prevent the Romanians from receiving political representation by imposing restraints on who could participate in politics. This resulted in the denial of Romanian rights and allowed the Magyars to increase feudal and military obligations. As these burdens became more onerous, the Romanians became increasingly oppressed and were eventually forced to oppose the Magyars, giving way to the Babolna Peasant Revolt of 1437.

Rembrandt & the Case of "The Polish Rider". A Polish Mystery?

Presenter: Lehti Mairike Keelmann, Art History

Faculty Supporter: Dr. Stephanie Dickey, Art and Art History

In Rembrandt's later years he moved progressively towards emphasizing the inner emotions of his painted characters. This inner emotion is present in perhaps one of the most mysterious paintings accredited to his oeuvre, "The Polish Rider" (c.1655). The issue of Rembrandt connoisseurship has become amplified by the mysterious qualities of this monumental painting. The debate surrounding the authorship and subject matter of this work has placed western Rembrandt scholars against their Polish counterparts. Consequently, scholars have been divided into two main groups: those who subscribe to the idea that the painting is indeed of Polish influence, and those who do not. This presentation will make serious considerations as to the Polish influences found in the identity of the rider and his costume, and his horse and harness. Moreover, it will suggest that "The Polish Rider" was indeed created as a portrait of a Polish soldier which Rembrandt's genius was able to depict with detail and sensitivity. It is the individuality of

the horse and the more subtle, outward gaze of the rider which suggest that we may never know what the painting's function was. And yet, scholars and viewers of the painting share in the mystery.

Identities, Communities and Belonging: The Effects of Violence and Trauma on Jewish Women

Presenter: Elana Finestone, Women's Studies/Psychology

Faculty Supporter: Dr. Jackie Davies, Philosophy

This paper helps to explain why sensitivity to cultural context matters in terms of violence and trauma such as sexual assault, sexual abuse, rape, spousal abuse, assault, and / or surviving the Holocaust. My interest in this paper was stimulated through my volunteer work at a Family Service Centre for Jewish women in Ottawa called Shalom Bayit. This particular volunteer experience helped me to understand that cultural location determines how people express a violating and harmful experience and the type of support they receive. This paper will explore different cultural locations as well as agency to civil, criminal and religious law. Women's agency plays a role in how Jewish women's experiences are voiced and validated by their surrounding community. The following research has implications for professionals working with violated and traumatized women. This paper will be using a comparative method researching Jewish women with different identities. Examples of identities to be examined are Secular, Orthodox, Israeli, Lesbian, and Sephardi Jewish women.

Session V: Water - 21st Century Oil

Speaker's Corner, Queen's Learning Commons, Stauffer Library

Thursday, March 6, 3:30-4:30

Moderator: Dr. Tom Russell, Faculty of Education

Landfill Expansion - Site Investigation Field Work

Presenter: Laura Branscombe, Geological Sciences and Geological Engineering

Landfills are unpopular. They are dirty, smelly, environmentally unfriendly and potentially dangerous. Working with landfills is, perhaps, more unpopular. Being employed to expand the major landfill for a major city is a task that forces self-assessment, particularly when the land in question is pristine woodland with hiking and horse-riding trails. The understanding dawns when one focuses not on what is happening as a result of one's work, but rather, what is *not* happening as a result of the work. Thousands of homes will be saved from polluted drinking water. The environment will not be severely affected and the area of influence of the landfill will not be so large. During my internship with Golder Associates, I had the opportunity to participate in the Site Investigation done to assess the technical viability of expanding a landfill. After an initial walkover, a grid was set up on the site, using machetes and chain saws. The forest was cleared on these lines by lumberjacks and the engineering team moved in to conduct a geophysical survey of the subsurface to assess the thickness of an underlying clay layer. That clay layer, if it is sufficiently thick, will protect the local water supply from escaped landfill leachate.

H₂O for All? Examining the Potential of Public-Public Partnerships in the Water Sector

Presenter: Gemma Boag, Global Development Studies

Faculty Supporter: Dr. David McDonald, Global Development Studies

Public-private partnerships (PPPs) in the water sector involve a private company carrying out the act of water provision while the state retains ownership of the service's assets, an approach taken by various countries of the global South in the early 1990s. Recently, however, there has been a return to the public sector for water service in some areas in the form of public-public partnerships (PuPs) which create links

across levels of government and between government and other public bodies. Interest in PuPs has been stimulated by an observed failure of adequate water service provision by PPPs (Bakker 2003; Hemson et al. 2006; Swyngedouw 2004). This presentation aims to first present a new, textured typology of the different types of PuPs employed in the global South. The PuP typology has been created by surveying academic, government, business, union and non-governmental organization literature. Second, the positive and negative aspects of each partnership configuration will be examined, particularly in terms of how effective each is at delivering water to marginalized communities. My analysis treats water as a “public” or “social” good, something that is essential to human health and well-being. The rationale behind this study is to isolate what types of PuPs would be beneficial to citizens in the global South and ensure that water is treated as a public good.

Impact of Climate Change on Hydraulic Performance in Water Distribution Networks

Presenter: James Northwood, Civil Engineering

Faculty Supporter: Dr. Yves Filion, Civil Engineering

The Intergovernmental Panel on Climate Change (IPCC) has forecast higher mean air temperatures for the mid-latitude region of North America. Studies have shown a strong positive correlation between temperature and municipal water demand. Warmer air temperatures in the future have the potential to increase municipal water demand above levels forecast without climate change considerations. The predicted increase in mean temperature and the onset of hotter and dryer summer weather may create challenges for water providers in the future. Without appropriate network upgrades, higher water demands may degrade the hydraulic performance of existing systems. This creates a need to characterize the impact of higher temperatures on peak water demands and on the hydraulic performance in water distribution networks. The aim of the research is to begin to understand the impact of higher temperatures on nodal demands and pressures in water distribution networks. The sensitivity of municipal water demand to an increase in air temperature is established through previous climate adaptation research completed for the geographical region of central Canada. Results indicate that without adaptation, a 2-4 °C temperature increase causes mean pressure head to fall below the acceptable minimum and produces large uncertainties in pressure head under maximum hour demand (MHD) and maximum day demand (MDD) + fire design conditions in the Anytown network. The combination of low mean pressure head and a high coefficient of variation of pressure head increases the probability of hydraulic failure in the Anytown network. Adaptation strategies are presented as ways to hedge the effects of a warming climate in the Anytown network

Session VI : Ideas in Motion

Stauffer Library 121, Queen’s Learning Commons, Stauffer Library

Thursday, March 6, 3:30-4:50

Moderator: Dr. Brenda Brouwer, Associate Dean, School of Graduate Studies and Research

Inquiry into Extending the Life of Valve Rocker Arms in High Performance and Large Capacity Engine

Presenter: Kadra Branker, Mechanical and Materials Engineering

Valve rocker arms in an engine aid in the timing of the valves. The valves control the air intake and gas exhaust from the cylinder chamber in the engine which affect the efficiency of the engine. Although the rockers are small and fairly inexpensive compared to other parts in the engine the disruption in the timing of the valves can have catastrophic consequences once they fail. Rockers experience considerable cyclic forces due to the repeated tapping on the valves, increasing with the revolutions of the engine. As a result rocker arms exhibit fatigue failure which is amplified by residual stresses that are induced during manufacture. The manufacturing methods employed in making the rockers influence material properties

along with the chosen materials which require specific methods of preparation. Proposed solutions include better alloying using powder metallurgy and the use of other materials in the design, such as ceramics, to improve their resilience and strength. The types of testing methods to determine the best solution and other possible areas of consideration, when solving the problem, will also be acknowledged. This presentation will illustrate how inquiry based learning can be used to solve the problem. It will address why valve rocker arms fail while assessing past and present research geared towards finding a solution, with emphasis on the manufacturing methods and material properties

Assessing the Downstream Targets of Calmodulin-like Protein 43 in Calcium Signaling in *Arabidopsis Thaliana*

Presenter: Dominique Morneau, Biology

Faculty Supporter: Dr. Wayne Snedden, Biology

As sessile organisms, plants are unable to escape environmental stressors that they may be faced with. As a result, they have developed a unique stress detection and response system involving calcium signals. These signals are received by calcium binding proteins, which are able to alter the gene expression, or metabolic activity of the cell. Calmodulin (CaM) is one of the primary calcium binding proteins. In addition to CaM, plants have evolved a family of calmodulin-like proteins (CMLs) that also function in calcium signaling. One particular CML, CML43, has been found to be linked with bacterial and viral pathogen detection and response in a few species of plants, including *Arabidopsis thaliana* and tomato. This study attempted to discover the protein targets of CML43 during calcium signaling, and its role in stress recognition and response. Yeast two hybrid analysis was found to be the best method for this particular kind of study because it allows for a high-throughput method of determining protein-protein interactions. Many putative interactors were found, and results from the purification and sequences of these interactors will be presented.

Discovery-driven Science: a New Model for Cell Motility

Presenter: Eleasa Sieh, Biochemistry

Faculty Supporter: Dr. John Allingham, Biochemistry

Movement is an essential characteristic of life. On the cellular level, it is powered by many different classes of motor proteins. Kinesins are one class of linear molecular motor proteins, which move on cytoskeletal tracks called microtubules. Conventional kinesins are dimeric molecules composed of several domains, including a motor domain which has a catalytic core that binds to a nucleotide (ATP or ADP). The nucleotide-bound state of kinesin during the motile cycle affects its neck position, a determinant of its direction of movement, and microtubule affinity. There are two types of motor protein movement: processive, in which the motor steps progressively along the cytoskeletal track without detaching, and non-processive, in which the motor detaches from the track after a single power stroke. Conventional kinesins move processively due to the dimerization of the two motor heads. The two heads are kept out of phase due to communication between the heads. Kar3, the kinesin of interest in this project, moves non-processively and is the only C-terminal motor protein found in budding yeast. Its functional form is a heterodimer with one of two non-catalytic polypeptides, Cik1 and Vik1. This project showcases Vik1 as the key to a novel model for motility due to the surprising discovery that the Vik1: microtubule interaction is influenced by the nucleotide-binding state of Kar3. There must be communication between Kar3 and Vik1 to cause Vik1's release from the microtubule, as well as to allow the progression of microtubule-binding and, thus, movement along the microtubule.

Multi-Joint Movement Coordination in Children with Fetal Alcohol Spectrum Disorders

Presenter: Dilmini Peiris, BioChemical Engineering

Faculty Supporter: Dr. James Reynolds, Pharmacology and Toxicology

The purpose of this study is to examine how human subjects with central nervous system injury resulting from prenatal exposure to alcohol coordinate multi-joint movements involving the shoulder and elbow joints. The study focuses on children and young adults (1) with a diagnosis of a Fetal Alcohol Spectrum Disorder (FASD), which is an umbrella term used to define Fetal Alcohol Syndrome, Partial Fetal Alcohol Syndrome, Alcohol Related Neurodevelopmental Disorder, and Alcohol Related Birth Defects; and (2) age- and gender-matched control subjects. The subjects are given a series of simple coordination tasks to perform, on a robot exoskeleton called the KINARM and the experimental data collected by the soft ware will be analyzed in great detail. The overall goal of this research project is to determine, whether motor movements and control of the limbs can be used as a potential diagnostic and research tool in children with developmental disorders.

Session VII: Time-Space-Place

Speaker's Corner, Queen's Learning Commons, Stauffer Library

Friday, March 7, 9:45-12:15

Moderator: Dr. Stephanie Dickey, Art and Art History

Is There a Fifth-Force? Using Galaxy Mergers to Constrain Dark-Matter Self-Interactions

Presenter: Maggie McLean, Physics, Astronomy & Engineering Physics

Over ninety percent of the matter in the universe is believed to be “dark matter,” a mysterious form of matter the nature of which is still unknown. Since it cannot be detected directly, dark matter can only be inferred from its effect on *visible* matter. This leaves a significant gap in our knowledge. Without the ability to measure the influence of dark matter on other *dark* matter, we could miss a possible fifth fundamental force which mediates dark matter self-interactions. We propose a means of constraining the existence of a “fifth-force” by observing galaxies that are in the process of merging. Using numerical simulations, we examine the effect of including a hypothetical fifth-force on the tidal disruption of visible matter during galaxy mergers. We find distinct differences in the formation and appearance of tidal features produced during these interactions, providing an observable constraint on the strength of any “fifth-force.” The sheer volume of interacting galaxies that can be observed makes tidal forces a valuable tool in studying a fundamental problem that would otherwise pose a great challenge for physicists.

Constructions of Time, Place and Space in Aboriginal Christianity: Spiritual Common Grounds and Disputed Territories

Presenter: Rachel Kelleher, Religious Studies

Inter-cultural religious development is an ongoing phenomenon that continues to provide relevant examples in today's world. As a result of this dynamic, many Aboriginal cultures known to have adopted the religion of the colonial state have retained much of their traditional spirituality, in both thought and practice. Aboriginal Christianity draws on traditional indigenous interpretations of time, place and space, which functions to separate it from classic European modes of Christianity. Time, place, and space, as fundamental dynamics of environment, are generally viewed by modern Europeanized society as indisputable, empirical expressions, or more specifically as the quantifying constructions of a secularized world. In actuality, much of our mainstream understanding of these dynamics has roots in Christian theology; ideas of time, place, and space in an Aboriginal context have been and continue to be seen as inextricably tied to the spiritual order of the universe. This presentation analyzes the extent to which time,

place, and space implicate themselves as demarcations of relationship between the spiritual and the physical in Aboriginal traditions and European Christianity, with emphasis upon the intersection of belief found within Aboriginal Christianity. In addition, an analysis will be made of the role that the “spirituality of the relational environment” plays in refining Western colonial ideology.

Sublime Visions: Piranesi and his Carceri Prints

Presenter: Gloria Bell, Art History

This paper examines the philosophical concept of the sublime and its impact in the work of the artist Giovanni Battista Piranesi. The main focus of the paper is Piranesi’s *Carceri* series, created during the period of 1740 – 1760 in Rome. Although Dionysius Longinus wrote of the sublime several centuries earlier, this concept became popular in 18th century aesthetic theory, and Piranesi had access to the writings of Longinus and 18th-century followers of his ideas. According to Longinus’ theory, creating a sublime work of art required daring and great thinking. The sublime was a quality of experience meant to move the soul to a higher realm. Piranesi attempted to emulate this quality in his own works by invoking the grandeur of ancient Rome. Piranesi was surrounded by ancient ruins and he was actively involved in archaeological digs. He wrote on the wonder of observing the ruins of Rome, “these speaking ruins have filled my spirit”. At the same time, Piranesi was not only surrounded by classical concepts; the motif of the gothic arch, which conveys the idea of architecture reaching up to heaven, also plays a role in his prints and their evocation of the sublime. His techniques with etching, composition, and depiction of light show his creativity, skill, and ambition, consistent with Longinus’ ideas. The iconography of the *Carceri* prints, especially Plates XIII, XIV, XVI, expresses Piranesi’s interest in the sublime through imaginative compositions, relating tiny figures to lofty architectural spaces, and through his demonstrated pride in ancient Rome.

Stauffer Cathedral: A Post-Modern Library

Presenter: Elizabeth Cai, Art History

Faculty Supporter: Dr. Peter Coffman, Art History

Completed in October 1994, the Joseph S. Stauffer Library is undoubtedly an audacious new addition to the landscape of Queen's University. Its innovative design, coupled with the library's emphasis on electronic-based learning, distinguishes the building as a product of the contemporary period. When examining the structure's aesthetic elements, however, its skeletal exterior frame, lofty interior spaces, and rising vertical supports recall the tenants of a much older tradition – those of Gothic architecture. This paper will examine the use of post-modern architectural theory by the library's architects and the homage paid to Gothic architectural traditions in order to place Stauffer Library in the long history of collegiate architecture.

3-D Visualization of Municipal Regeneration using ArcScene

Presenter: Melissa Fedrigo, Geography

This presentation illustrates the use of ArcScene as a 3-D visualization tool in the context of prospective changes to the physical environment of a small municipal community. Before large-scale regeneration is agreed on or fully implemented in a municipality, there is an emphasis on the appearance of the area of interest over the course of the implementation. This presentation will discuss the benefits and limitations of 3D visualization for pre-construction, during, and post-construction presentation to municipal residents, members of council and impacted business owners.

The Urban Picturesque: Legitimizing the New York Skyscraper through Art

Presenter: Jeff Taylor, Art History

In the early twentieth century, debate concerning the social impact of skyscrapers in the modernizing city was widespread, and usually quite acrimonious. This paper will address how artists of this time-period, in their artistic representations of cities and skyscrapers created an urban metaphor of the picturesque as a means to influence a public, increasingly not in favour of the skyscraper. In effect, skyscrapers slowly crept into artistic representations, humbly appearing in late-nineteenth century architectural magazine illustrations or as accents in the skyline of American impressionist paintings. The prolific growth of the twentieth century brought the public debate over skyscrapers into the spotlight and artists took this as an opportunity to promote their views. Some artists, such as the Pictorialists took the opportunity to aestheticize their pictures of the buildings in a fashion that might convey a sense of sublime in the city. Much of the scholarship on the depiction of the skyscraper in the arts has been limited to the Pictorialist photographer's advancement of modern art in New York City; however, these studies neglect the social significance of the Pictorialist's use of nature metaphors to create an urban sublime reminiscent of the romantic, picturesque landscapes of the previous century. My paper examines the effect of this aestheticization and the significant promotion and support of the skyscraper from the visual arts, specifically from the photographs of Alfred Stieglitz and his circle. I will investigate the development of this aesthetic and how familiarity with this style strengthened support for the skyscraper in the metropolis of New York City. I will further explore these ideas by examining the treatment paintings and photography, in the construction of a familiar sense of awe and, in other words, conjuring the picturesque as a device.

TITAN to Google Earth: Workflow for Data Processing for Mobile Terrestrial LIDAR

Presenter: Michael Martin, GIS Program, Geography

Co-Presenters: Craig Sheriff, Terrapoint Canada

Faculty Supporter: Robin Harrap, GIS Lab, Geology

Terrestrial LIDAR scanners are pushing the boundaries of accurate urban modelling. Automation and the usability of tools used in feature abstraction and, to a lesser degree, presentation have become the chief concerns with this new technology. To broaden the use and impact of LIDAR in the geomatics, LiDAR datasets must be converted to feature-based representations without loss of precision. One approach, taken here, is to simultaneously examine the overall path that data takes through an organization and the operator-driven tasks carried out on the data as it is transformed from a raw point cloud to final product. We present a review of the current practices in LiDAR data processing and a foundation for future efforts to optimize. We examine alternative LIDAR processing workflows with two key questions in mind: computational efficiency - whether the process can be done using the tools at all - and tool complexity - what operator skill level is needed at each step. Using these workflows the usability of the specific software tools and the required knowledge to effectively carry out the procedures using the tools are examined. Preliminary results have yielded workflows that successfully translate LIDAR to 3D object models, highly decimated point representations of street data represented in Google Earth, and large volume point data flythroughs in ESRI ArcScene. We are documenting the pragmatic limits on each of these workflows and tools for end-users. Terrestrial LIDAR brings with it new innovations for spatial visualizations, but also questions of viability. The technology has proved valuable for specialized applications for experts, but can it be useful as a tool for proliferating 3d spatial information by and to non-experts. This study illustrates the issues associated with preparing 3d LIDAR data for presentation in mainstream visualization environments.

Session VIII: Communication

Stauffer Library 121, Queen's Learning Commons, Stauffer Library

Friday, March 7, 9:45-11:05

Moderator: Dr. Brian Frank, Electrical and Computer Engineering

Morphological Awareness and Prosodic Sensitivity in the Development of Advanced Reading Skills

Presenter: Ellie Clin, Linguistics

Faculty Supporter: Dr. Lesly Wade-Woolley, Education

That language abilities and literacy abilities are intrinsically linked is a well-founded conclusion, driven by the past three decades of research examining reading development. Although the effects of phonological awareness (PA) - the conscious ability to manipulate the sound structure of one's native language - in developing successful early reading skills are well-known, its predictive abilities attenuate rapidly as development progresses. Accordingly, more recent research has also examined the influence that other linguistic skills present. The present study examines how morphological awareness (MA) - the conscious understanding of how words can be created by using different morphemes, the meaningful units of language - and prosodic sensitivity (PS) - the perception of how stress patterns in English can change the meaning of a word or phrase - affect the reading skills of children in grades 3, 5, and 7 from the Kingston area. Each child was given three batteries of tests, comprised to measure the child's abilities in reading, MA, PS, PA, language comprehension, memory, general intelligence, and other skills. Our results show that both morphological awareness and prosodic sensitivity are significant predictors of reading skills, above and beyond the significance of phonological awareness, and after controlling for other skills such as memory and intelligence. Such findings are critical to improving our understanding of how reading ability develops in children and how we as researchers may be of aid to improving the skills of children struggling to learn literacy skills.

"The Written World" - Conceptions of the origins, properties and uses of literature

Presenter: Alex Benarzi, English

Inspired by such imaginative works as Alan Lightman's *Einstein's Dreams* and Italo Calvino's *Invisible Cities*, "The Written World" is a series of descriptive vignettes paying homage to literature itself. In an office in an ambiguous high school, an English teacher with hopeful dreams of becoming a published author tries to escape the mundane life of staying late to mark essays before returning home to an empty apartment. He reminisces about the once promising days of his university undergrad years and his mind wanders to a conversation he had in an English class one year about the different meanings of literature: the different ways in which to look at literature and the different metaphors that surround literature. "In a moment's lapse of inspiration" ("The Written World") the teacher writes at the top of a page: "Conceptions of the Origins, Properties and Uses of Literature" and begins to record his short vignettes. "The Written World" presents literature in many different styles. From the metaphorical tale of a pregnant woman giving birth to a book, to the dark story of a literary orphanage where the city's discarded and unwanted literature is kept. From the absurd tale of literature being the only chew toy suitable for dogs to the romantic story of a young man who finds and loses love through literature. Behind the text lies such ideas as "what does it mean to be an author?" "Why do we read?" "Why do we discuss literature with others?" and "What inspires one to write?"

Timbit, Javex and Zed: Do Canadians realize that they have a unique vocabulary?

Presenter: Gretchen McCulloch, Linguistics

Co-Presenter: Kirsten Wright, Linguistics

Faculty Supporter: Dr. Jill Scott, German

Many Canadians feel that there is some difference between Canadian and American speech beyond simply the spelling of "colour," and linguistic research has confirmed that many vocabulary items, like poutine, eavestrough, and skate-a-thon, are found only in Canada. Although this topic has been popularized somewhat by books like Katherine Barber's *Only in Canada, You Say*, the extent to which Canadians are aware of the distinctness of their everyday vocabulary is still uncertain. This survey of 54 Queen's students, all native English-speaking Canadians age 24 and under, shows that real and false Canadianisms can be placed in categories based on meaning association and frequency of usage that correlate to the likelihood that respondents will judge them as "uniquely Canadian." Comparing identification and usage also reveals some intriguing characteristics of this demographic, including the decline of "chesterfield," contact with "francophones," and gender differences in food-related Canadianisms. This presentation will examine both specific examples and general trends found in the survey, as well as suggesting potential areas for further related study.

Jazz Composition

Presenter: Scott Purchase, Music

Faculty Supporter: Mr. Greg Runions, School of Music

Music composition is an art of courage and thoroughness. After nearly four years of playing jazz with Queen's music professor Greg Runions (winner of the 2006-07 Queens Music Department Teaching Award) and studying music theory and analysis, I have recently delved into the fascinating art of writing original music in the broadly defined jazz idiom. The opportunity to give something back to the creative music community has been both humbling and inspiring. Through Prof. Runions impressive experience as a prolific local composer, I have learned about the challenges of connecting melodic ideas with music harmony that both pleases and challenges the listener. In two semesters of study, we have explored jazz arranging for a variety of instrument groups, the complex art of chord extensions and modulation, and writing melodies over chord progressions that are memorable and enjoyable. I have produced a dozen songs in lead sheet format, similar to the way music is found in jazz performance fake books. Some of these pieces have been fleshed out to cover a wide range of instrumental performance, including solo piano, jazz combo, vocal jazz ensemble, and full jazz ensemble. I plan to continue this process throughout my life as new inspiration and musical situations arise, seeking to grasp the expressivity and enjoyment that music instills in us all.

Session IX: Hunger

Stauffer Library 121, Queen's Learning Commons, Stauffer Library

Friday, March 7, 11:20-12:00

Moderator: Dr. Jackie Davies, Philosophy

Vomito, Ergo Deconstruo (I Vomit, Therefore I Deconstruct): A Practical Analysis of Deconstruction

Presenter: J. Rosel Kim, English

Vomit: a digestive malfunction, or a deconstructive metaphor? Through close-reading of a meal gone awry, I set out to prove that Derrida and vomit are indeed compatible, and may even share the same objectives of demonstrating the shortcomings of Western rationalism that expects and anticipates only perfection. The first stage of getting ready involves the *méconnaissance* (misrecognition) of Lacan's mirror stage: the immaculate self catches a glance of the neat and perfect self in the mirror, and mistakes the snapshot of the flawless Ideal-I as his/her real self. This Ideal-I quickly destabilizes, however, when he/she crumbles into

the ground in the middle of the meal, as the meal proceeds not to pleasantries, but projectile. The "impeccable" self disappears as it hurls on the floor, creating a problem that nobody wants to see. This is what Julia Kristeva labels a "narcissistic crisis," where boundaries and perception of the self are obscured by the body's production of the abject matters, deconstructing the seemingly neat and definite boundaries of self and other. The essay concludes by deconstructing the meal/vomit binary, by showing the symbiotic relationship between the two that cannot exist without the other by applying the Derridian of *différance* and freeplay.

Performing Our World of Mass Consumption: "What's for Dinner?" a Play

Presenter: Jacqueline Andrade, Drama

Faculty Supporter: Dr. Jenn Stephenson

The play which I have written titled *What's for Dinner?* is a piece which critiques the consequences of mass consumption in our world today. The growing issue of "affluenza", the inspiration for this work, has become increasingly prominent in western society. The play deals with two characters that represent the first-world society, living a fast-paced consumer-based lifestyle. These greedy, exaggerated characters have invited a guest for dinner - a character representing humanity and innocence, and acting as the normative element in the abstract piece. After the early courses of an outrageous dinner party, she discovers that she is the main course. The dinner party employs the motif of the days of creation according to the Bible while manipulating the story to represent the first world society and their interpretation of creation. The two "upper class" characters describe the intricacies of the process whereby they have created their luxurious house and their extravagant life together. This leads them to engross themselves in the abnormal, but vital culinary courses. The five courses leading up to the main course,- represent the stages in which people have been thrust into a consumerist lifestyle. Each meal is a progression to the ultimate deterioration of our world and the innocence of mankind. The objective or spine of this play is to exaggerate society's mass consumption in hopes of preventing our impending self-destruction. This speaks to the issue of sustainability in our world. We have the ability to make social change, but are too obsessed with the appeal of gain. I will present these ideas in a short talk, supplemented by a short reading of the most vital moment in the play. This combination of spoken presentation with dramatic enactment is an effective way to promote theatre as an outlet for these important ideas and emphasize the potential impact of drama for social change.

Session X: In Community

Speaker's Corner, Queen's Learning Commons, Stauffer Library

Friday, March 7, 1:00-2:40

Moderator: Dr. Christine Overall, Philosophy

Turnout and Voting Methods in the United States - How Shiny is the Shining City?

Presenter: Iain Crawford, Political Studies

Faculty Supporter: Dr. Elizabeth Goodyear-Grant, Political Studies

This presentation combines and applies principles from both political science and geographic information science in order to gain unique insights into electoral politics and voter turnout in the United States. Missouri is used as a case-study because it has a longstanding history as a political bellwether due to its unique position straddling the historic North/South and the contemporary East/West divide; in addition its socioeconomic background closely mirrors national averages. Since the United States leaves the method of voting a responsibility of the counties, there is a discrepancy in the types of technologies used. This can result in some electorates being more prone to faulty machinery, which in turn leads to errors at the ballot box. In order to effectively answer the question- what was the effect that varying voting methods had on the turnout in Missouri during the 2004 Presidential election? - a multi-disciplinary approach must be taken which applies both a qualitative background to provide context and a strong quantitative element to provide hard empirical results. In order to address the quantitative element, due to the spatial nature of the data being used, regular statistical analysis is not possible without inviting inherent errors. Instead a variety of

spatial statistics will be used to help address the hypothesis that counties which have lower voter turnouts will have less reliable methods of voting.

Unbundling Institutions: Using Economic Analysis to Understand the Importance of Institutions

Presenter: Christina Scriven, Economics/Global Development Studies

A large literature on institutions has developed that claims that institutions influence long-run growth and development; thus, it becomes critical to carefully examine what institutions influence which outcomes to better understand factors that influence long-run economic growth across countries. Douglass North terms institutions as the rules of the game and this paper will work to further examine these rules by looking at private property rights institutions, which are the rules and regulation protecting citizens against the power of the government and elites, and contracting institutions, which are the rules and regulations governing contracts between ordinary citizens. The paper *Unbundling Institutions*, published in the Journal of Political Economy by Daron Acemoglu and Simon Johnson in 2005, seeks to conceptualize the different factors within the institutional framework and provide some semblance of which of these factors provide the most relevant analysis. The paper finds that property rights institutions have a strong influence on long-run economic growth, investment, and financial development, while contracting institutions have a more limited impact on those same factors. My presentation will give a concise background on the development of the new institutional approach and explain the reasoning for the conceptual divide between property rights and contracting institutions. Using a two-stage least squares regression (2SLS) approach and the instrumental variable approach, the presentation will address issues of causality and correlation. Identifying the link to the policy arena will provide context as to why this area is of particular importance.

A Critical Examination of the History of Communication in Kingston: Technology's role in Social Justice in the Kingston Community

Presenter: Nate Preston, Engineering Physics

Information & Communications technology is developing at an astounding rate. Recent developments in Information & Communications technology have given consumers the power to communicate with others from almost anywhere, and with greater reliability. Mainstream media and the engineering community often applaud these technologies for helping to create a more transparent, pluralistic, global, and just society. However, many of these new technological developments are inaccessible and alienating to many members of the community. This paper examines the role that Information & Communications technology has played in the Kingston community. Published historical and personal accounts made by members of the Kingston community are compared and contrasted with those from the Queen's University Control and Communications Degree program.

Gender and Development: Where are the Men? Masculinity and HIV/AIDS in Southern Africa

Presenter: Corinne Mason, Global Development Studies

This presentation will focus on men, masculinities and the HIV/AIDS pandemic in Southern Africa. As the interest in gender and development in Africa increases among experts in the development field, men have been increasingly left out of the discourse. Given the severity of gender inequality in Sub-Saharan Africa, focus on women is necessary. However, due to the prevalence of issues such as violence and HIV/AIDS prevalence among men, masculinity as a social construct must be given appropriate attention. In 2000, The United Nation Joint Programme on HIV/AIDS launched a World AIDS Day campaign called "AIDS: Men Make a Difference". A UNAIDS March 2000 report acknowledged the importance of working with men to halt the HIV/AIDS pandemic due to "cultural beliefs and expectations [which] heighten men's vulnerability" to HIV/AIDS. Similarly, scholars have recently taken interest in the intersection between masculinity and HIV/AIDS. This presentation will provide an overview of the exclusion of men's issues in development and the reasons why we need to start paying attention to masculinity as a gendered construct.

The Aboriginal Experience in Kingston, Ontario

Presenter: Martha Moon, Geography
Faculty Supporter: Dr. Laura Cameron, Geography

For my undergraduate thesis, I have conducted in-depth/ethnographic interviews with several Aboriginal people who live in Kingston, Ontario. My goal is to listen to and learn from their experiences. There is emphasis on the role of certain places within Kingston, as well as comparing Kingston to other places where the participants have lived. The interviews are open-ended in order to allow participants to determine which parts of their experience are most important to share.

Session XI: Brave New Binary World

Stauffer Library 121, Queen's Learning Commons, Stauffer Library

Friday, March 7, 1:00-2:00

Moderator: Dr. Robin Dawes, Computing Sciences

A Comparison of Quantum Cryptography Protocols

Presenter: Sean Kershaw, Computing
Faculty Supporter: Dr. Marius Nagy, Computing and Dr. Selim Akl, Computing

The study of quantum computation has yielded many advantages over classical computing. One area in which quantum computation has been shown to be superior is encryption. The main advantage of quantum key distribution schemes over conventional ones is that the security of the former is guaranteed by the very laws of physics (quantum mechanics in this case), while the security of the latter usually rests on unproven assumptions about the computational difficulty of a certain problem (such as factoring a large integer). This study focuses on two key distribution protocols based on the quantum model: One developed by Charles Bennett and Gilles Brassard in 1984 (BB84), the other developed by Marius Nagy and Selim Akl in 2006 (NA06), which uses BB84 as a base, but expands on it using the Quantum Fourier Transform. Unlike conventional protocols, quantum protocols have the ability to detect eavesdropping and the NA06 protocol is the first key distribution scheme capable of detecting an eavesdropper by testing bits that were not even eavesdropped on while in transit. The purpose of this study is to assess the performance of this novel protocol relative to the now classical BB84. These protocols are simulated on a classical computer and compared to determine what advantages, if any, the NA06 protocol holds over the BB84. The results of this report have implications in the theory of quantum key distribution.

A Nonlinear System Modelling Technique Applied to a Microelectronic Circuit

Presenter: Michael O'Connor, Electrical Engineering

Parallel Cascade Identification (PCI) is a nonlinear system modelling method developed by Dr. Michael Korenberg of the Queen's Electrical and Computer Engineering department. This method models dynamic systems with possibly high order nonlinearities and lengthy memory, given only input/output data for the system. The industry-standard Berkeley BSIM3 model for transistors involves 187 different parameters and hence is complex to execute. Dr. Korenberg's method offers the possibility of making a simpler model of a given circuit, so that its responses to novel inputs can be more quickly computed (possibly at some cost in fidelity). In my presentation, I intend to present the results of applying PCI to a simulated amplifier circuit, a topic that has been treated only cursorily in the literature.

Session XII: Seeking Redemption

Speaker's Corner, Queen's Learning Commons, Stauffer Library

Friday, March 7, 3:00-4:20

Moderator: Dr. Luke Bisby, Civil Engineering

Something like a Phenomenon

Presenter: Tyler Peikes, Philosophy

Phenomenology is a twentieth century school of thought that addresses philosophical questions by focusing our attention on the nature of experience. Emmanuel Lévinas combines this approach with the fundamentally ethical knowledge that there is another who is beyond us, who is exterior. My project examines Lévinas' ethically informed phenomenological reflections on the structure of two specific experiences, namely love and forgiveness. Forgiving and being forgiven are everyday, familiar experiences. But what are we really doing when we forgive someone? My approach is exegetical in spirit; while attempting to remain faithful to Lévinas' esoteric texts, I resort to combining Levinasian sources in order to survey and restate his ideas and to fill in some of the blanks that confront the reader. I extrapolate in good faith as a student of Lévinas, guided by shared intuitions and insights. I begin by exploring our intuitions about what may be considered a wrong that nonetheless can be forgiven. Then, I explore two paradoxes of forgiveness to illustrate the complexity of the process and indicate the path towards a solution. Before I arrive at this solution, I compare the experience of forgiveness to the experience of love and discover that what lies at the heart of the issue is the intentional altering of memory and history. This phenomenon turns out to be not only possible but commonplace in everyday experience. Through it the meaning of *felix culpa*, the happiness of guilt, can be revealed. This revelation will be the happy ending of my presentation.

Elevated Love: Correggio and Michelangelo's Depictions of The Rape of Ganymede

Presenter: Yvonne Li, Art History

Chronicling the lives of the pagan Gods, *Metamorphoses* was essentially a compilation of stories based on Greek mythology. As the title suggests, the primary theme throughout the work was that of change and evolution. Suggesting that the process was naturally occurring, the stories also sent the message that in spite of any physical transformation, the soul or spirit would remain fundamentally the same. In short, the world was in constant flux but the soul was not. Although this idea ran throughout the epic poem, Ovid's story was richly layered and comprised of many other aspects, with various themes continuing throughout the book. One reoccurring theme was that of unrequited love, which often involved one character in aggressive pursuit. Jove, otherwise known as Jupiter in Roman mythology, was the supreme God of the Heavens and though he was married to Juno, he often lusted after the most beautiful of mortals in the earthly realm. This presentation proposes that while Ovid's *Metamorphoses* provided a starting point for artists, these Ovidian stories were open to interpretation (and reinterpretation). Similar to religious imagery, which was most dominant at the time, they were constantly adapted in art. Examining two different portrayals of the Rape of Ganymede, one by Correggio and the other by Michelangelo demonstrates how *Metamorphoses*, as the title implies, was able to continually evolve and remain relevant to the changing social values.

The War against Reality: A Youth Perspective on the Columbine High School Massacre

Presenter: Celine (Ha-Young) Song, Psychology/Philosophy

This paper takes a critical look at the cases of Eric Harris and Dylan Klebold, two boys responsible for the Columbine High School massacre, and Seung-Hui Cho, responsible for the recent tragedy at Virginia Tech. After careful examination of the published literature on relevant topics including junior delinquency, school massacres, and the increasing access to media, I propose that these violent incidents are logical consequences of an escapist approach to reality, undeniably prevalent in the current youth population at

large. Fantasies (any product of the imagination), conjured up by books, movies, games, television, internet, and drugs, provide an escape away from the unsatisfactory reality, and serve as one weapon in the war against it. Although fantasizing can be therapeutic and creative in moderation, when one is hopelessly ill-equipped to deal with the obstacles of real life, one becomes more and more *dependent* on fantasies as the solution to all problems. In the case of Harris, Klebold and Cho, this dependence escalated to violent hatred against reality. However, violence in movies and video games are not what leads people to mass murder. Rather, the fault is in the society that breeds a generation of escapist who *need* such fantasies to survive. The readymade fantasies on television – violent, sexual, and otherwise – that many criticize as the *source* of evil in these young people are mere *symptoms* of a greater phenomenon, produced to meet the overwhelming and preexisting demand for an escape.

A Circle of Women: Creating Community for Healing at Four Directions Aboriginal Student Centre

Presenter: Dana Wesley, Women's Studies / Global Development Studies

Co-Presenter: Erin Heslop, Four Directions Aboriginal Centre

Within the Queen's University community there are limited culturally appropriate activities for Aboriginal students. Traditionally and currently it is not common practice for an Aboriginal person to go to a stranger for guidance for personal issues. It is more common to seek guidance from a family member, community member or an elder. Aboriginal women in communities across Canada were historically valued as leaders and respected in their various roles within those societies. After colonization Aboriginal peoples were forced to adopt European patriarchal values. Consequently women were no longer allowed to hold leadership positions within their communities and the roles that they did play were perceived as less valuable. In addition to this ideological shift, the spiritual connection that women previously held with each other was disconnected through various processes. The sixties scoop and residential schools were processes that had negatively affected these relationships within Aboriginal societies. The Women's Circle strives to bridge the disconnect that occurred and utilize time spent together during traditional activities to provide a safe place for this healing to begin. The Women's Circle will also support Queen's University's mandate of engaging diversity and encouraging the Non-Aboriginal community to learn more regarding Aboriginal cultures, as well as the mandate of Four Directions Aboriginal Student Centre, specifically to foster the emotional, mental, physical and spiritual well-being of the Aboriginal Students at Queen's University.

Session XIII: Poster Presentations

Queen's Learning Commons, Stauffer Library

Presenters will be present at posters Thursday, March 6, 11:00-12:00

Posters will be on view March 6 & 7

1. Economic Impacts of Bovine Spongiform Encephalopathy in Canada and Europe And The Effect of Compensation Programs

Presenter: Kate Burnett, Economics

Faculty Supporter: Dr. Michael Tyshenko (University of Ottawa)

Before the first domestic case of bovine spongiform encephalopathy (BSE) was identified in May 2003, Canada was the world's third largest exporter of cattle behind the United States (U.S.) and Australia. After the BSE disclosure, the U.S. and 40 other countries imposed an immediate ban on imported Canadian beef and cattle products. The interdependence of the Canadian beef industry with that of the U.S. prior to the outbreak of BSE was a critical factor in Canada's market vulnerability and the resulting economic impact. As the re-opening of the U.S. border was prolonged, beef producers adopted a variety of strategies to deal with the loss of income including refinancing existing loans and selling land or other assets. However these measures taken by individual farmers were not sufficient in completely supplementing their loss of income, thus creating a need for government funding and support. Little research has been done to assess the impact of government subsidies as a tool to offset the economic losses incurred by BSE. The analysis of the impacts of BSE and the resulting subsidies is extended to Britain, France, Germany and the European Union to see if government subsidies had a similar impact as compared to Canada. Analysis of existing literature shows the economic impacts to be heavily impacted by the structure of the beef industry and the subsidies to be impacted by consumption levels. The result of the subsidies is unclear; however due to lack of recent information the full analysis of the result of subsidy programs is difficult to determine.

2. Effect of climate change on the predation rate of zooplankton in Swan Lake, Sudbury, ON

Presenter: Corinne Daly, Biology

Faculty Supporter: Dr. Shelley Arnott

Climate change interacts with other environmental stressors (e.g., acid deposition, calcium depletion, invasive species) to alter both the chemical and biological characteristics of Boreal Shield lakes, potentially leading to changes in aquatic biodiversity. Changes in biodiversity can result in loss of sensitive species and affect dynamic interactions among species at varying trophic levels. Currently, little is known about the effect of climate warming on predator-prey relationships in aquatic ecosystems.

I examine how predicted warming of Boreal Shield lakes may affect predation rate. More specifically, my research examines how temperature affects the predation rate on zooplankton by common macroinvertebrate predators. Zooplankton, *Chaoborus* and *Notonectidae* were used from Swan Lake in Sudbury, ON. I performed 24-hr laboratory feeding trials to examine the rate at which predators feed over a range of natural and predicted lake temperatures. By investigating differences in invertebrate predation occurring in Swan Lake, we will be able to predict predator-prey relationships in Boreal Shield lakes subject to warming as a result of climate change.

3. Learning Modules in a Support Group Context for Caregivers of Individuals with Alzheimer’s Disease and Related Dementias

Presenter: Wafa Nurdin, Nursing

Co-Presenter: Aicha Wane, Nursing

Faculty Supporter: Dr. Judy DeWolfe

The majority of community dwelling individuals with dementia have informal caregivers. With the risk of developing care related stress, it is important for community agencies, like the Alzheimer Society of Kingston (ASK), to provide support, resources, and information. The goal of this intervention was that caregivers of individuals with Alzheimer’s disease and related dementias (ADRD) would improve physical, social, and mental well-being. A search of the literature, as well as surveys of support group facilitators, forty caregivers, and consultation with ASK helped determine information relevant to the caregivers. The purpose of this project was to develop learning modules on: a) using a problem-based strategy to assist with daily activities of the person they are caring for; b) self-care strategies; c) positive coping strategies; d) assertive communication skills, and e) home environment safety to be delivered during caregiver support groups. The module on a problem-based strategy to assist with daily activities was pilot tested, utilizing five caregivers. It was found that the learning module was approximately 30 minutes over the stated timeframe and the case study component of the module was ineffective. Recommendations include implementing the module as two parts. Furthermore, additional research is needed on the impact of the modules on caregiver stress and burden.

4. Racism and Domestic Violence

Presenter: Angela Nemec, Sociology

Faculty Supporter: Dr. Cynthia Levine-Rasky

The purpose of the study is to investigate domestic violence within the framework of ‘race’. Specifically, its purpose is to raise awareness of the negative impact of racism in relation to violence. It will illustrate that the relationship between ‘race’ and violence is a spurious one – differences in rates of domestic violence are not due to the biological factor of ‘race’ but rather due to various social factors which impact particular racialized groups at different rates. The poster will show that racial stereotypes and other forms of racism hinder solving the problem of domestic violence by blaming racial factors instead of social structural ones.

5. The Uncanny Wound: Psychic and Physical Openings in Kafka’s “A Country Doctor”

Presenter: Emily Kulms, German

Faculty Supporter: Dr. Jill Scott

Franz Kafka’s stories lure readers into a fascinating world of abstraction, in which imagery is both abundant and absurd. His works are like dreams; they are abstract and paradoxical, leaving the reader to decipher details to expose a cohesive meaning. Kafka’s “A Country Doctor” and “An Old Manuscript,” both use wound imagery to express the psychological state of characters, a tactic that may be called psychosomatic. Through a careful examination of the physical wounds in these stories and what triggers them, I will reveal hidden emotions, unfulfilled desires, and repressed primal urges of the subconscious mind. In “A Country Doctor,” for example, the doctor’s feelings of guilt and sexual desire towards his maid, Rosa, manifest themselves in his patient’s pink wound (“rosa Wunde” in German). Fear and self-destruction follow, as the doctor is pulled ever-further into the ominous depths of his subconscious. Such feelings of succumbing to one’s own repressed thoughts are echoed in Sigmund Freud’s essay, “The Uncanny.” As Freud maintains, the inability to comprehend the familiar is perhaps even more eerie than the unknown. The bodily wound is a mark of physical hardship, but when it comes to represent the psychological decay of a human, the result is undeniably uncanny. In my presentation, I will outline

Kafka's main techniques for exposing the psychic wound and the uncanny. Through visual aids and diagrams, I will make Kafka's complex narrative style accessible to a broad audience.

6. Examining the Interconnection of Attention and Working Memory

Presenter: Catherine Charbonneau, Psychology

Faculty Supporter: Dr. Daryl Wilson

The current study consists of two experiments aiming to examine the relationship between visual attention and working memory. The first experiment examines whether the contents of working memory influence the allocation of visual attention. While past studies have shown mixed results, we are attempting to control for external factors which may have affected these findings. The second experiment examines whether perceptual processing of an item can affect the contents of working memory, effectively seeking to examine whether the relationship examined in the first experiment works in the opposite directions. Results are forthcoming.

7. Measuring the Rate of Mercury Loss in Amphipod Gut and Tissues after Exposure to Contaminated Sediments

Presenter: Jonathan Martin, Biology

Faculty Supporters: Dr. Linda M. Campbell and Dr. Peter V. Hodson

Mercury (Hg) contamination of the St. Lawrence River along the Cornwall waterfront is the result of over a century of industrial inputs. Yellow perch (*Perca flavescens*) are contaminated above the consumption guidelines deemed safe by Health Canada in one of three contaminated depositional zones. Amphipods are crustaceans that play an important role in aquatic food webs, and a recent study of the diet of yellow perch showed that amphipods were the primary food source of yellow perch in these zones and that amphipods showed similar patterns of Hg contamination. However, not all Hg taken up by amphipods is bioavailable. That is, not all Hg is incorporated into the tissues and available for uptake by yellow perch. To determine if Hg analyses of amphipods are biased by Hg present in their gut contents, the rate of Hg loss was measured from the gut and tissues. Amphipods were collected in the field using artificial substrates. A sample was frozen immediately upon retrieval, and the remaining amphipods were kept in a sieve in a basin of filtered river water. Amphipods were then sampled over 16 days to compare Hg concentrations in gut contents and tissues before and after they were removed from the Hg source in the field. The data were used to estimate the portion of Hg bioavailable to yellow perch. This enables us to more accurately estimate the extent of Hg contamination that is moving through the Cornwall food web, leading to elevated concentrations in top trophic fish species.

8. The Effect of *Bythotrephes Longimanus* on the Size Structure of Zooplankton Communities in the Muskoka Region, Ontario

Presenter: Johanna Pokorny, Biology

Faculty Supporters: Dr. Shelley Arnott (Queen's) and Dr. Beatrix Beisner (Université du Québec à Montréal)

Invasive species are considered the greatest threat to aquatic ecosystem biodiversity. *Bythotrephes longimanus*, an exotic zooplankton species introduced to North America in the 1980s, is threatening the structure of indigenous aquatic ecosystems as it continues to invade inland Ontario lakes. As a predacious zooplankton species, *B. longimanus* has been shown to decrease zooplankton abundance, species richness and shift zooplankton community size structure in invaded lakes. However, much of the previous research concerning the predatory effects of *B. longimanus* has been on surveys of a small number of lakes or has been in controlled mesocosm or lab-based experiments. This study examines the effects of *B. longimanus* on the zooplankton community using size-structure characterizations (grouping individuals from the community based on size) as community measures for 311 lakes in the Muskoka Region, a highly invaded watershed in Southern Ontario. More specifically, the study explores the size-spectra of invaded versus

uninvaded lakes, with reference to an array of environmental lake characteristics (water chemistry, lake morphometry, etc.), and the relevance of *B. longimanus* activity on the regional scale. By using such a large-scale survey we will be able to appreciate regional-scale effects, as well as encompass the multiple and more indirect trophic interactions that *B. longimanus* is likely having with the entire aquatic community. (Funding: NSERC & CAISN.)

9. Within-Object Attentional Allocation Biases

Presenter: Natalie McGlynn, Psychology

Faculty Supporter: Dr. Daryl Wilson

This study involved two experiments. The goal of the first was to evaluate how visual attention is distributed spatially within an object, and how a spatial distribution may change over time. We accomplished this by having people press a button as soon as they noticed a target appear at various onset times and locations within an arch-shaped object. In the second experiment, we extended the arch-object and cued one end of it, in order to examine whether attention is biased to follow the shape of an object even if such a mechanism reduces the efficiency of a visual search. Results from the first experiment indicate that initially, there is no attentional bias to any location within an object. However, as looking time increases, a developing bias to the centre of objects occurs before attention adopts a strategic spatial distribution within the object. Results from the second experiment indicate that after attention is captured by a cued area, attention shifts away from the cued location. The path attention takes from the cued area is not constrained within the object. With increased time, however, attention does not move back to the cued location. Therefore, although attention is not constrained to follow the shape of the object one focuses on, it seems that the efficiency of a visual search is still jeopardized due to reluctance for attention to move to previously attended locations.

10. A Discursive Monopoly: The Role of the Canadian Mainstream Media in the Social Dislocation of Aboriginal Peoples

Presenter: Erin O'Neill, Global Development Studies

Faculty Supporter: Dr. Cynthia Levine-Rasky

This poster investigates the Canadian mainstream media's power and participation in discourses of subjugation surrounding contemporary Aboriginal issues in a manner that discriminates against the realities of Aboriginal cultures and peoples and the historical context of the inequitable Aboriginal social location in Canada. I examine the ways in which the Canadian media has engaged in "reality construction" whereby a particular ideological perspective is imposed on the public that constructs Aboriginal peoples through stereotypes, omission of historical fact, and appropriation of identity. This is demonstrated by an analysis of the portrayal of Aboriginal peoples as a monolithic "problem people" for the Canadian nation in four prevalent categories: 1) as a threat to Canada's national interests; 2) as a risk to Canada's social order; 3) as an economic liability; and, 4) as a problem for the criminal justice system (Fleras and Elliot 2003:327). This was evident in reporting on the Kaschewan Reserve water contamination in 2000, the Marshall Decision court ruling in 1999, and the Oka Crisis protests in 1990. The discourses analyzed here are derived from particular power relations that produce stereotypical reporting in support of the dominant interests, thus manufacturing public opinion that divides Aboriginal and non-Aboriginal citizens by reducing the complexities of Aboriginal concerns. This reporting serves to justify the biased prescriptions of the Canadian federal government that discriminate against the values and realities of Aboriginal peoples. Finally, I identify the potential for resistance to these discourses through evidence of expanding Aboriginal media control and expression.

11. MEMS Seed Sorting Mechanism

Presenter: Marc Burnie, Mechanical Engineering

Faculty Supporter: Dr. Lai

Seed sorting is an essential task in agriculture for maintaining the quality and purity of the yield. The current method for sorting seeds in the 50-200 μ m range is both tedious and inefficient. To increase productivity in the micro-scale an autonomous process using dielectrophoresis (DEP) selection techniques has been employed. By applying a controlled electric field, the seeds can be differentiated depending on their size and dielectric properties. Using existing Micro-Electro-Mechanical Systems (MEMS) technology, a preliminary working design was fabricated to prove the viability of the concept. Future iterations of the model will utilize counters and be fully automated with the ultimate objective of bringing the design to market.

12. Solving a Maze Using DNA Computing

Presenter: Jameel Mawji, Computing

Faculty Supporter: Dr. Selim Akl

DNA computing allows us to design linear time algorithms for problems that are intractable for conventional computing methods. The high degree of parallelism provided by DNA computing allows us to create simpler algorithms for solving computational problems. In this study, a DNA computing algorithm is proposed to solve the maze routing problem – finding the optimal path through a maze. Performing the algorithm in a biology laboratory would be impractical and would exceed the scope of this project since the experimentation itself would take days. To demonstrate the steps involved in the algorithm, a simulation was developed on a conventional computer to display the in vitro techniques that would need to be performed in order to solve a maze using DNA computing in a biology lab environment. However the simulation in silico is limited in the size of problem since the processes that would occur in parallel in vitro with DNA computing, occurs sequentially with conventional computers (in silico), causing larger problems to take exponentially longer to compute. Thus, the in silico simulation is confined to smaller, more manageable problems. This serves an example of the power of DNA computing over conventional methods. Our algorithm is the first to solve a maze routing problem using DNA computing.

13. The Bioaccumulation of Elements through the Food Web in Lake Albert, Uganda

Presenter: Lyndsey Cox, Biology

Faculty Supporter: Dr. Linda Campbell

The importance of heavy metal assessments in African lakes is increasing due to human population growth and industrialization. Trace metal concentrations in freshwater fish from Sub-Saharan lakes have largely been found to be below the World Health Organizations permissible levels for human consumption. Lake Albert, Uganda, has seen substantial increases in human population and industry over the last 50 years, yet little is known about the bioaccumulation of potentially harmful elements through the food web. Recent work using stable nitrogen (^{15}N) isotopes found mercury in Lake Albert fish to be biomagnifying to concentrations among the highest in Africa. Some fish exceeded 1000 ng/g ww, while the World Health Organizations recommended limit for mercury consumption is 200 ng/g ww. This study supplements the previous Lake Albert mercury work by examining Al, As, Cd, Cs, Co, Cr, Cu, Mg, Ni, Mn, Fe, Rb and Zn concentrations in various Lake Albert fish species using Inductively Coupled Mass Spectrometry. Biomagnification will be assessed by combining the metal analysis findings with fish trophic levels (estimated using ^{15}N). The results of this study increase understanding of the bioaccumulation trends of many metals that have not yet been extensively studied in freshwater fish. Such information is critical to the development of effective aquatic management strategies and consumption guidelines for the Lake Albert area.

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