



Inquiry@Queen's 6th

Annual Undergraduate Research Conference

Program

March 8 & 9, 2012
Queen's Learning Commons
Stauffer Library

iatq.ca

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March 2012

Welcome to the 6th Annual Inquiry@Queen's Undergraduate Research Conference. We have two full days to share, discuss, think, learn and feel excited about the research of our undergraduate students. The work they will present comes from many avenues - course work, theses, design projects, and summer research opportunities such as the Undergraduate Student Summer Research Program (USSRP); some came simply from an interest in a topic, and a desire to know more and think more.

Inquiry@Queen's is more than a conference; it is an approach to learning where the teacher and the learner reside in the same person. It is a natural extension of a university that prides itself on the quality of undergraduate education and its scholarship and research.

We invite you to attend the oral presentations, to view the posters and talk to the presenters, to ask questions, to attend the opening ceremonies and the special events, but most certainly to enjoy the breadth of undergraduate student scholarship. Drop by for an hour, an afternoon, a day or two days!

We thank all those who have supported us over years. Congratulations to all participants!

On behalf of the Inquiry@Queen's Steering Committee,

Co-Chair, Nathalie Soini
Acting Head, Learning and Research Services
Stauffer Library
Coordinator, Queen's Learning Commons

Co-Chair, Vicki Remenda
Queen's Chair in Teaching and
Learning, 2006-09
and Geological Sciences and
Geological Engineering

CONFERENCE AGENDA

Thursday, March 8, 2012

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

NOTE: All sessions are held in Speaker's Corner unless otherwise indicated.

- 9:00 Coffee
- 9:30 Opening Remarks
Dr. Vicki Remenda, Geological Sciences and Geological Engineering
Welcome from Dr. Steven Liss, Vice Principal, Research and Ms. Martha Whitehead, University Librarian
- 9:40 Keynotes
Provost Alan Harrison
Students of DRAM 439 and their instructor Dr. Jenn Stephenson reflect
BioBoxes: Think Inside the Box
- 10:45 Session I: Prisons
- 10:45 Session II: Ecology (Room 121, Stauffer Library)
- 12:30 Innovation in the classroom for students with (Dis)Abilities**
- 1:30 Session III: (Dis)Ability
- 1:30 Session IV: Language and Culture (Room 121, Stauffer Library)
- 2:30 **TOWN HALL FORUM: The Queen's Learning Commons** - Open to everyone
- 3:30 Break
- 3:45 Session V: Left Brain/Right Brain
- 3:45 Session VI: Drugs and Money (Room 121, Stauffer Library)

Friday, March 9, 2012

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

9:00	Coffee
9:15	Session VII: Affiliation and Identity 1
9:15	Session VIII: Recycling, Resources and Sustainability 1
10:45	Session IX: Symbol Recognition
10:30	Session X: Education (Room 121, Stauffer Library)
11:30	Session XIII: Pizza and Posters: Lunch with the Poster Presenters (Room 121, Stauffer Library), All Welcome
1:30	Session XI: Recycling, Resources and Sustainability 2
1:30	Session XII: Affiliation and Identity 2 (Room 121, Stauffer Library)
3:30	Conference Wrap-Up

Opening Panel Presentation

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

Thursday, March 8, 9:30

BioBoxes: Think Inside the Box

Presenters: Rebecca Kirby and Jordan Rodrigues, DRAM439

Faculty Supporter: Dr. Jenn Stephenson

Session I: Prisons

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

Thursday, March 8, 10:45-11:30

Moderator: Dr. Pam Dickey Young, Religious Studies

Precarious Labour, Occupied Lands: The Checkpoint Economy and the Proletarianization of Palestinian Women.

Presenter: Mays Abdel Aziz, Political Studies

Faculty Supporter: Dr. Margaret Little

The thesis explores the phenomena of the proletarianization of Palestinian women and their experiences as migrant workers in Israel. Proletarianization refers to the separation of producers from the land they utilize for household subsistence and transforming them into wage labourers, hence integrating them into the capitalist system of production. Within this political economy framework, it will become clear that we are not only exploring a capitalist context, but most distinctly the economics of occupation. The assignment of these women to a separate ethnic group within Israel, but also to a separate economic group of "guest" workers who went back to their homes in Palestine at the end of the day had deep implications on both the economies and the structures of Palestinian and Israeli societies. This mostly unprecedented separation of the Palestinian woman from her land and family disturbed the traditional structure of the Palestinian private household. I will also explore how this phenomenon transformed these women and to what extent it transformed their gender roles, "liberated" them from patriarchy, and where it situated them in the nationalistic struggle against occupation.

Enemy at the Gates: the Prisoner of War Experience in the 20th Century

Presenter: Meaghan Dalby, History

Being a Prisoner of War (POW) is a mentally and physically trying event for any soldier who has to experience it. Many captured soldiers are forced to live in horrid conditions, where they may be required for intensive labour, suffer from malnutrition, are often tortured, and in some cases, unable to contact their family. For some, they returned home after surviving these trying conditions only to be accused of being weak or "brainwashed" by the enemy to sympathize with foreign agendas. In the 1950's, after many World War II POWs were returning home, this was a very popular subject in media, which only exacerbated the public opinion of weakness among the soldiers. The fear of explicit indoctrination by captors can cause panic in the public sphere during times of war, leading to a misunderstanding of soldiers who have returned home from POW camps. However, this paper will prove there is a tendency among soldiers who returned to be more understanding and tolerant of other cultures, without being a threat to their own country. With a focus on soldiers who fought in the 20th century, this paper will explore the process of indoctrination or re-education, how media influences the public response to POWs, and case studies of soldiers who returned home without feelings of disdain for their captors. Beyond all the

negativity, and despite the Prisoner of War survivors living through generally horrible conditions, because exposure to different cultures, few of them retained negative feelings towards their captors after they have been released.

Civilization in 19th Century Latin America: The “Modernization” of Cities and the Use of Prisons as a Form of Racial Control

Presenter: Daniella Dávila Aquije, Political Studies and History

In the mid to late 19th century, Latin American states adopted European ideals of “civilization.” These ideals were foundational for several state projects that looked to “improve” the aesthetics of Latin American major cities, which were modelled after Paris, the epitome and embodiment of modernization. This “civilizing” reform of the cities caused the ghettoization of non-white communities, given that modern cities were conceptualized as white cities. Thus, to “Europeanize” Latin American cities, Indigenous, Black and Asian peoples needed to be contained and displaced. This was achieved through the creation of the prison system, which came to represent a new form of slavery and a state mechanism for the continuous control of racialized communities. This presentation will examine how criminality was socially constructed to justify the imprisonment of a specific “type” (or race) of person, which is evident given the prison demographics of the time. It will also analyze the theories of eugenics which provided justification for the project of civilization, which only served to worsen the social ills that contributed to crime. Finally, it will point to the colonial agenda behind the prison system.

Omnipresence: Total Surveillance...a Result of the Changing Times and Ignorant Minds

Presenter: Danielle Fishman, Health/ Sociology

As a result of the changing times, the constant overuse of recently discovered information communication technologies (ICT’s) has become a detrimental trend in contemporary society. There are a number of issues that arise from the regular use of these technologies which ultimately lead to the misuse of certain capabilities of these technologies. Web 2.0 (DiNucci, 1999), became the subject of discussion in the early 2000s. Web 2.0 identifies the newly popularized social networking sites on the World Wide Web which allow an interaction between the host and the user where the user has the ability to respond, comment or offer feedback to the host. It has been used to describe the idea of information sharing, feedback and ultimately, ubiquitous connectivity. As a result of the current Web 2.0 we engage in, there is a trend toward the constant use of social networking sites ultimately leading to *participatory surveillance* (Albrechtshund, 2008). Furthermore, the constant posting and updating required to manage your profile on social networking sites leads to *new surveillance* (Marx 2002) and sequentially, what has been termed *lateral surveillance* (Andrejevic, 2005). In addition, the development of location based technologies, for purposes of monitoring, have been integrated into popular social networking websites. The term Web 2.0 is associated with web applications that facilitate participatory [information sharing](#), [interoperability](#), user-centered design and collaboration on the [World Wide Web](#). A Web 2.0 site allows users to interact and collaborate with one another in a [social media](#) dialogue as creators of [user-generated content](#) in a virtual community. This differs from the previous Web 1.0 websites where users (consumers) were limited to the passive viewing of content that was created for them. In turn, these activities are extensively popular and through the network effects of that popularity, economically significant (O’Reilly, 2005; Tweney, 2007; Madden and Fox, 2006). Finally, in accordance with the *prosumer society*, monetary gains are the primary focus of companies and furthermore, there has been a trend toward selling private information by internet website hosts in order to profit. The harnessing of collective intelligence within Web 2.0 demands platforms where this intelligence can be expressed and collected.

Furthermore, in an age of growing technology, new legislations must be created in conjunction with the growing use of personal information. In a time of extreme internet use, our privacy is limited. With a growing trend toward the integration of Web 2.0 in daily life, it is clear that the relationship between privacy and surveillance is dramatically changing. We, as users, are naive in understanding the concepts of privacy and surveillance in the Web 2.0 society. Social networking systems and information sharing has blurred our ideas of privacy and limited our understanding of the use of surveillance. In a growing age of a prosumer society and the culture of social networking, users are inadvertently exposed to living an entirely public life.

Session II: Ecology

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

Thursday, March 8, 10:45-12:00

Moderator: Ms. Anne Johnson, Robert M. Buchan Department of Mining

Group Size, Habitat Use and Behavioral Ecology of Amazonian River Dolphins (*Inia geoffrensis* and *Sotalia fluviatilis*) in the Pacaya-Samiria National Reserve, Peru

Presenter: Evan Hall, Environmental Science student

Faculty Supporter: Dr. Ryan Danby

Presentation Title: River dolphins globally represent a highly at risk group of mammals. Most river dolphin species inhabit the world's large rivers, which are also highly populated and heavily utilized. The focus of my research was on the two species of freshwater dolphins that inhabit the Amazon River, the boto (*Inia geoffrensis*) and the tucuxi (*Sotalia fluviatilis*). Currently both species are listed by the International Union for Conservation of Nature (IUCN) as 'Data Deficient', which means there is currently not enough information known about them to accurately assess whether or not they are endangered. Major gaps in research of these two species currently exist in many basic biological and ecological parameters. The focus of this research was to compare existing data on group size and habitat preference as well as determine the behavioral ecology of the two species of river dolphins. The research was conducted in the Pacaya-Samiria National Reserve, Peru, which has a relatively high density of river dolphins. The reserve consists of many small tributaries, which are relatively understudied and so the conclusions drawn from this research will help guide future research and management decisions in other regions of the Amazon.

Analysis of Tyrrell Sea Deposits from the Vicinity of the Victor Diamond Mine: Comparison of Three North American Clay Deposits

Presenter: Jean Holloway, Geology

Faculty Supporter: Dr. Vicki Remenda

The De Beers Victor Mine is an open pit diamond mine, and is located in the James Bay lowlands. The lowlands are characterized by extensive peatlands overlying Tyrell Sea sediments. One of the potential impacts of open pit mining, and the focus of the current work, is the potential for differential subsidence in the Tyrell Sea sediments owing to continuous groundwater withdrawal from the underlying limestone aquifers. To fully understand the potential effects of subsidence, a better understanding of the nature and properties of the Tyrell Sea sediments is needed. This will be achieved by analyzing various properties of samples collected from the Victor Diamond Mine, and comparing those properties with values from Lake Agassiz sediments and Bearpaw Shale. Properties such as hydraulic conductivity, grain size, plastic and liquid limit, and mineralogy will be compared. It is expected that the samples from the Victor Mine are a rock flour dominated by clay fraction, composed mostly of finely ground carbonates. The sediments are expected to have

high plasticity, low hydraulic conductivity, and moisture content too low for that of true clay.

Post-Pollution: Characterizing Ecological Recovery in a Historically Nutrient Enriched Lake.

Presenter: Iain MacKenzie , Biology

Faculty Supporter: Dr. Brian Cumming

An iconic story of recovery from nutrient pollution is the restoration of the heavily enriched Lake Washington in Seattle, Washington State. Originally an integral part of the municipal septic system, a diversion of wastewater in 1968 has allowed Lake Washington to return to what has been recently described as a natural and healthy state. Yet is it accurate to characterize a lake as “recovered” based purely on chemical measurements? Does a legacy of pollution linger on in the ecology of a lake system long after the lake has been given a clean bill of health?

Using paleolimnological reconstructive techniques it is possible to compare pre-pollution and post-pollution communities of algae by looking at microfossils stored chronologically in the lake-bottom sediment. Use of this technique has afforded a test of the assumption that once pollution stress in a lake is alleviated, the algal communities quickly return to the pre-pollution state. Work on Lake Washington indicates that this does not always hold true. Instead, it suggests that a legacy of pollution persists in the algae and ecological community of the lake long after the nutrient levels have returned to normal.

Sea Dyke Rehabilitation and Climate Change in Dutch and Japanese Contexts

Presenter: Heather Murdock, Civil Engineering

Faculty Supporter: Dr. Neil Hoult

The purpose of this paper is to analyze the relationship between climate change and the need to rehabilitate sea dykes. Sea dykes are a critical component of coastal infrastructure and national flood prevention systems and are increasingly susceptible to a number of failure mechanisms under climate change conditions.

This paper will explore case studies of sea dyke rehabilitation and climate change in both the Netherlands and Japan. Both countries have urban areas within close proximity to coastal areas and have constructed sea and river dykes as part of their national flood prevention plans. The International Panel on Climate Change published a report in February 2012 stating that mean global temperatures are going to increase by 1 to 3 degrees Celsius by 2050, which will affect global weather conditions. The characteristics of climate change which most affect sea dykes include the frequency and severity of storms as well as global sea level rise. These trends increase the risk of dyke failure modes such as overtopping, micro instability, and erosion of non-reinforced inner slopes. Techniques for rehabilitation both proven and proposed will be discussed with a particular focus on methods for implementation as well as the policy framework of these projects.

Think Globally, Act Locally: The Small Scale Effects of Climate Change, Seen in White Spruce (*Picea glauca*) in SW Yukon

Presenter: Katriina O’Kane, Environmental Science/Geography

Faculty Supporters: Dr. Ryan Danby and Dr. Kurt Kyser

Although climate change is a global phenomenon, the broad patterns observed are well known to affect regions differently; for example exhibiting more significant warming over the arctic compared to the global trend. Similarly, broad regional climate trends can have differential effects on local areas. These finer scale differences are especially noticeable in the Kluane Ranges of Southwest Yukon, where multiple macroclimates exist due to substantial local variation in soil

moisture holding capacity, solar insolation, wind flow patterns, snow depth and duration of snow cover, soil moisture, etc. It has been shown that climate change is affecting the region, yet it remains unclear as to how changes will affect these various local environments. The goal of this research has been to determine how large-scale regional climate trends have affected different areas in the same region. The project has looked at spruce growing at three different sites, and seen how trees at each site have responded. The sites investigated include Moist Subalpine (which is often characterized by thick, moist moss growing on mountain slopes), Dry Alcove (which is characterized by less vegetation, dry grass, and slopes that appear to be well drained and more sandy), and Windy Valley (which is characterized by exposed slopes in a long glacial valley that tunnels cold winds from glaciers). Initial findings point to differences in growth patterns between the tree sites, which promise exciting results!

Session III: (Dis)Ability

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

Thursday, March 8, 1:30-2:15

Moderator: Mr. Robert Burge, Registrar, Education

From Fresh and Filling to Fatty and Fake: Exploring the Environmental Causes of Contemporary Obesity.

Presenter: Danielle Fishman, Health/Sociology

The World Health Organization states that more than 1.5 billion adults, aged 20 and older are overweight, of which at least 500 million are obese (WHO, 2011). In addition, over 45 million children, under the age of five, are obese (ibid). Worldwide the obesity rate has more than doubled since 1980 (ibid). These statistics are particularly alarming because obesity is a preventable illness. This drastic increase in more recent years demonstrates the need for intervention. Environmental aspects which have caused the current obesity epidemic can be described by four important changes in our society. Primarily the epidemic largely stems from increased food availability resulting from augmented international trade. In addition, the current epidemic largely results from the shift of food ingredients from primarily plant-based products to animal-based. Furthermore, current ingredients have led to adaptations in the human brain size essential for intellectual growth. Finally, our environment has led to substantial alterations in activity patterns and has ultimately caused a sedentary lifestyle in both children and adults. The current rise in obesity can be attributed to the changing environment and our acquired habits resulting from these changes. Although humans have created excellent physiological mechanisms to defend against weight gain, these mechanisms are unable to sustain a normal weight if consumption of food is constant. The current epidemic can be attributed to shifts in the global environment resulting in changed eating patterns and decreased activity levels.

Predictors of Relationship Outcome between Disabled and Non-Disabled Siblings

Presenter: Laura Peill, Psychology

Faculty Supporter: Dr. Patricia Minnes

In recent years, there has been increasing research on individuals with a disabled sibling looking at the impact of the relationship on the adjustment and behaviour of the non-disabled sibling and predictors of sibling relationships such as behaviour disabled sibling. Although research to date has focused on individual factors, there is a need for research on the relative contributions of multiple factors. The purpose of this study is to understand the sibling relationship outcome between a disabled and non-disabled sibling as predicted by the stressors caused by the disabled

sibling, the non-disabled sibling's relationship perception and available coping and resources. This study will use the ABCX model (McCubbin & Patterson, 1983) as a framework to study predictors of relationship outcome between disabled and non-disabled siblings. Predictor variables will include: stress, aA factor, (demographic information and behaviour of sibling with a disability), resources, bB factor (knowledge about disability and resource use), perceptions, cC factor (self-efficacy and comfort with disabled sibling) and outcome, xX factor (relationship quality). I hypothesize that when the non-disabled sibling is more comfortable and knowledgeable about the disability and has a higher level of self-efficacy and available resources, the relationship will be perceived more positively, improving relationship quality and leading to a positive relationship outcome. Participants will consist of approximately 100 individuals aged 16 – 26 who have a sibling with a developmental disability. Data will be collected through an online survey. The results of this study are valuable, as understanding what the predictors are that lead to a positive versus negative relationship outcome is the first step in helping to intervene in the relationship and input the right implementations to ensure a positive outcome.

Mental Health Stigma in Medical Educators: The Images Study

Presenter: Jenna Thygesen, Life Sciences

Faculty supporter: Dr. Heather Stuart

Neuropsychiatric disorders are among the leading cause of disability worldwide, accounting for 13% of the global burden of disease, and one-third of all years lost due to disability. In Canada 15% of the population report that they have been diagnosed as being clinically depressed, with at least one in five Canadians experiencing a mental illness in their lifetime. Recruitment to psychiatry within medical schools worldwide ranges from approximately 2-7%, resulting in unfilled psychiatric residencies and an inadequate number of practicing professionals to address demand for mental health services within populations. The negative socialization hypothesis attempts to explain the lack of interest as the result of anti-psychiatry statements by peers and non-psychiatric faculty members. An international questionnaire measuring the prevalence of stigmatizing attitudes towards non-psychiatric physician educators at medical centres was conducted under the auspices of the Association for the Improvement of Mental Health Programmes. Results will be discussed within the context of current theories about stigmatizing attitudes towards psychiatric patients and the field of psychiatry. Current anti-stigma programmes and the impact of culture on mental illness and stigma will also be discussed.

Session IV: Language and Culture

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

Thursday, March 8, 1:30-2:30

Moderator: Ms. Sylvia Andrychuk, Librarian

Arviq! The Northern Hunter's Spiritual Connection to Animals and Community

Presenter: Chelsea Drent

In Inuktituk, *nuna* means the land. It means the rocks, rivers, mountains and the forests. *Nuna* is everything, and all parts of the *nuna* have an *inua*, which means a living soul. There is a special, if not sacred relationship between members of northern communities and the *nuna*. However, these sacred relationships are all too often glossed over, if not forgotten. In the social sciences, author John Sorenson articulates a critical argument and evocative opinions about hunting in his article; *Hunting is a Part of Human Nature* (John Sorenson, "Hunting is a Part of Human Nature," *Culture of Prejudice, Arguments in Critical Social Science*. Eds. Judith Blackwell,

Murray Smith, John Sorenson, (Canada: Broadview Press, 2003). Sorenson demonstrates that hunting is an unnatural human activity which is linked to a cultural domination over animals. However, in these statements Sorenson neglects to consider the northern hunter in Inuit communities around the world. Cultural myths, social constructions and daily activities prove that hunting animals is a core value to how many Inuit peoples relate to each other and perceive themselves in the cosmos. This is a study that examines the relationship of people, land, animals and faith in order to understand the significance of hunting within Inuit cultures.

Accent Identification in RP, CE, and GA By Native and Non-Native English Speakers

Presenter: Jonathan Reid, Linguistics

Faculty Supporter: Dr. Anastasia Riehl

This study was conducted in order to determine various groups' accuracy in identifying three major standard English accents. The main purpose of the experiment that was performed was to determine how well speakers familiar with these accents could tell them apart from other accents. It focused on comparing the test subjects' recognition of Canadian English pronunciation with General American pronunciations. Received Pronunciation was used as a control as it is generally considered to differ much more from the standard North American varieties than they differ from one another.

Within North America, the 'standard' accents of Canada and the US are quite similar. So similar, that one of the experiment's hypotheses is that that despite being identified by linguists as different, many native speakers of the two dialects would have difficulty telling the difference themselves. The differences in the features of Canadian English (CE) and General American (GA) have been identified and studied by linguists before, but what this experiment sought to determine was the degree to which speakers of these dialects could tell them apart purely through listening.

Canada is given some degree of stigma from the United States for its dialect, and has had fun poked at it for such Canadianisms as the use of 'eh?' and Canadian Raising- Americans will exaggerate the difference when illustrating it, saying "about" [ə'but] for about [ə' bʌʊ t]. But how well can they perceive the difference when not already informed about the speaker's origins? An online survey was prepared, with audio clips or words in isolation and sentences, spoken by speakers of GA, CE, and RP, specifically using words that exhibited features that vary between the accents. This allowed us to examine subjects' degree of recognition with, and without prosody, and to analyze the degree to which prosody affects accent recognition. In order to better determine how prior exposure influences accent recognition, the subjects were broken down into three groups: Native speakers of Canadian English, native speakers of American English and ESL speakers who had had prior exposure to Canadian English.

One of the main findings of this experiment is that more than 80% of American respondents recognized their own national standard accent, and around 67% recognized the Canadian accent; while only 62% of the Canadian respondents recognized the Canadian accent accurately. Compared to Canadians, Americans were better at telling the North American varieties of spoken English apart.

The Play's the Thing: Dialogues Between my Conscience and my Audience

Presenter: Smita Misra, Drama

Faculty Supporter: Dr. Julie Salverson

Under the supervision of Professor Julie Salverson, I am in the process of compiling a critical memoir, which explores my assumptions and the transitions of my thinking, as an actress and choreographer for the recent Drama Department Production: Dust. This play was put on in

collaboration with the Toronto Theatre Company, Human Cargo. It explores the effects of the war in Afghanistan on families in Afghanistan, Pakistan and Canada. In the play, I choreographed and played the role of Bibi Bakhtawar, the mother of a child Taliban suicide bomber in Swat Valley, Pakistan.

Session V: Left Brain/Right Brain

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

Thursday, March 8, 3:45-5:15

Moderator: Dr. Jill Atkinson, Psychology

Queen's Genetically Engineered Machine Team (QGEM): Nemoremediation

Presenters: Kevin Chen; Tony He; Anujan Poologaindran; Eni Rukaj, Stephanie Zhou

Synthetic biology is a rapidly growing field that tries to simplify genes into "biobricks" and use these to push the limits of what is possible in genetic engineering. The Queen's Genetically Engineered Machine Team competes annually at the International Genetically Engineered Machine Competition, one of the largest undergraduate research conferences on the planet. Last year's project focused on modifying the nematode worm, *C. Elegans* to chemotax, or seek out and degrade pollutants, such as naphthalene. We have produced genetic constructs with protein receptors from *M. musculus*, *R. norvegicus*, and *H. sapiens* intended to enhance the worm's ability to chemotax towards naphthalene and other pollutants. We also worked on a field bioassay based on fluorescent proteins that will indicate the presence of naphthalene in a soil sample. The goal is to have a population of green fluorescent worms chemotaxing toward and a population of red fluorescent worms chemotaxing away from the naphthalene in the soil sample. Finally, we have added the *P. putida* gene, nahD, to the biobrick registry, which encodes a degradative enzyme as part of a naphthalene catabolic pathway.

Relationship between Gender Stereotypes and Anxiety and the Effects on Negotiation Performance

Presenter: Catherine Oppedisano, Psychology

Faculty Supporter: Professor Susan Brodt, Commerce

Women with comparable education and experience typically negotiate significantly lower starting salaries and subsequent raises than their male counterparts. The purpose of this study is to further investigate gender differences in negotiation performance by examining the link between stereotype threat and anxiety. Stereotype threat occurs in situations that invoke stereotype-based expectations for poor performance; because men typically enjoy a positive stereotype advantage in negotiation settings (where effective negotiators are believed to be assertive, rational, constructive, effective and decisive), they typically outperform women. Recent work by Kray, Galinsky & Thomas (2001) observed in mix-gender dyads that redefining female stereotypes as positive or enhancing to negotiating, women actually outperformed their male counterparts. To further understand the underlying mechanisms behind these findings, the current ongoing study compares levels of anxiety and negotiation performance under three experimental conditions that differ in terms of engendering stereotype threat.

Medieval Romance, Antique Primitive: B.W. Mountfort's Hemingford Church

Presenter: Emily Turner, Fine Arts

The Gothic Revival is arguably one of the most important and influential architectural movements before the advent of global culture in the twentieth century. Spreading throughout the British Empire in the nineteenth century, Gothic Revival architecture had the power to influence the culture of Britain's newest and farthest colonies, particularly New Zealand, a colony that was viewed as a blank slate free for development. It is without surprise that Gothic Revival architecture became a prominent part of the young colony's landscape in the opening decades of its development. One of the architects primarily responsible for the introduction of the Gothic style to the colony was Benjamin Woolfield Mountfort. His first design for the colony was a small church at the settlement of Hemingford in Canterbury. This modest design not only demonstrates Mountfort's skill as an architect in his ability to adapt the complex and demanding Gothic style to a wooden church constructed with limited financial and material resources but also his ability to create a church that reflected the emerging cultural identity of the young colony. This paper will argue that, for New Zealand, the Gothic Revival and its adaptation on the islands became a symbolic style that represented the country New Zealand was to become: a younger, better England. It will also argue that Mountfort's Hemingford Church was the ideal representation of everything the colony wished to achieve, neatly packaged in a humble architectural design.

Treatment of Silicon Dioxide Films Resulting in Luminescence from Silicon Nanoclusters

Presenter: David Wisniewski, Physics, Engineering Physics and Astronomy

Faculty Supporter: Dr. B. J. Diak

A large conglomerate of silicon atoms is known to group together forming a silicon nanocluster. Through quantum confinement effects, these silicon nanoclusters are known to luminesce when they are grown to a critical radius. Luminescence may have applications ranging from data transmission over wireless networks, to building low cost biomedical lasers, and to effectively eliminating the bandwidth of a signal inside of a silicon chip, hence it is a worthwhile research interest. This critical radius was modeled as a function of the concentration of excess silicon originally embedded in a silicon dioxide film. Using a simplified diffusional approach, the theoretical size, growth and pacification of nanoclusters were compared to experimentally confirmed results. Processing techniques that may allow for the growth of such a film were examined, and an American company called Veeco was found that could accommodate such a process.

Changing Strings: How the Influence of the 19th Century Middle Class Changed the Guitar and Lute.

Presenter: Chad Yacobucci, Music

Faculty Supporter: Dr. Clara Marvin

From the 16th to the 18th century the lute dominated the attention of European musicians, who cared little for the early guitar. Composers and musicians of the time held the tone and versatility of the lute in the highest esteem, while largely ignoring the guitar due to the relative simplicity of the existing repertoire. By the 19th century, however, the guitar had become extremely popular while the lute had disappeared almost entirely. The socioeconomic background of Europe played a key role in the fate of these two instruments; in particular, the growing economic power of the newly emergent middle class was decisive in determining the rise and fall of the guitar and lute, respectively. This presentation will compare and analyze the cultural and aesthetic antecedents that led to the acceptance of the guitar and the retrospective difficulties the European middle

class had with the lute. Drawing connections between the evolving musical aesthetic and the social and economic climate of a particular period is an important undertaking as it serves to not only broaden the understanding of music and its' history, but also to provide a unique insight into society at that time.

"To the soul made of fire ... I am ever tender and true": The Foreshadowing Role of the Fire Motif in Charlotte Brontë's *Jane Eyre*

Presenter: Felicia Latour, English

Faculty Supporter: Dr. Petra Fachinger

The literature concerned with the interpretation of the fire motif in Charlotte Brontë's *Jane Eyre* is largely unsatisfactory, since most critics fail to address its function as a foreshadowing device. This study provides an original interpretation that concerns itself with highlighting the key role of fire in the signalling of Jane and Mr. Rochester's union, and celebrating Brontë's scrupulous writing style that greatly influenced the tradition of the romance novel. By collecting and analysing more than a hundred fire-related passages within *Jane Eyre*, this study reveals how they take on significant patterns throughout the novel. By exploring these patterns, this study traces the correlation between the novel's fire-related passages and the development of Jane and Rochester's budding romance, thus revealing how the fire motif sustains the notion that these lovers are destined for each other. Such patterns include the physical mirroring of fire, the portrayals of Jane's inflammable personality, the descriptions of Rochester's "fiery" gaze, and the significant recurrence of fire in the novel's key events. Since the notion of destiny is a crucial convention of the romance genre, Brontë's manipulation of the fire motif as a foreshadowing device is not only remarkable but significant in the understanding of how successful romance novels operate. Thus, this research demonstrates Brontë's innovative use of figurative writing in *Jane Eyre*, which not only presages the novel's romantic conclusion, but heavily influences the works of such authors as Jean Rhys and Tessa McWatt.

Session VI: Drugs and Money

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

Thursday, March 8, 3:45-5:00

Moderator: Dr. George Bevan, Classics

Constantine's Introduction of the Gold *Solidus*

Presenter: Jessica Harden, Classics

Faculty Supporter: Dr. George Bevan

In the Roman Empire of 3rd century AD was subject to serious hyperinflation, which was caused by the overproduction of the denarius, which by this point contained minimal amounts of silver. At the end of the century Diocletian attempted to solve this problem by fixing the prices of goods but was unsuccessful. Constantine I during his reign in the early 4th century AD introduced a new gold currency, the *solidus*, which successfully brought down inflation. The *solidus* had a consistent weight and a floating exchange rate with the base-metal currency. The result of this was a stable denomination that acted in some respects as a gold standard. Constantine was able to accomplish what previous emperors could not because of two extraordinary events: his conversion to Christianity and the discovery of a new source of gold in the reign of his son Constantius II. His conversion to Christianity allowed him to confiscate the wealth from pagan temples. The accounts of these confiscations by Eusebius were previously thought to have been primarily laudative. Recent work done by Kevin Wilkinson on the dating of Palladas, another

contemporary writer, has shown that these confiscations were a reality. These two events supplied the empire with enough gold to effectively jump-start his economic strategy. A better understanding of these events is achieved by examining modern historical parallels. These are the confiscations of Jewish property in Germany during the 1930s, Spain's economy after discovering New World gold and Brazil's use of a floating exchange-rate to stop hyperinflation.

Functional investigation of a highly conserved aspartate residue in the anti-cancer drug efflux transport protein MRP1

Presenter: Graeme Mullins, Pathology & Molecular Medicine

Faculty Supporters: Dr. Alvaro Hernandez and Dr. Susan PC Cole

Multidrug Resistant Protein 1 (MRP1 or ABCC1) belongs to a subclass of ATP-binding cassette (ABC) transporters that export a wide range of metabolites and xenobiotics across the plasma membrane. Increased expression of MRP1 in cancer cells enhances efflux of many anti-cancer agents, giving rise to multidrug resistant tumours. The purpose of this study was to investigate the function of an aspartate (Asp) amino acid that is highly conserved in all MRP-related proteins by mutating it and determining the consequences of doing so. Asp430 lies at the interface of the cytoplasm and a transmembrane helix in the first membrane-spanning domain of MRP1. Previous studies have shown that when Asp430 is mutated, the protein becomes unstable and is degraded. Because this Asp430 is highly conserved in many MRP-related ABC transporters and because structural homology models of human MRP1 predict that Asp430 is in close proximity to Arg433, we hypothesized that a salt bridge between these two amino acids could be essential for proper folding and stability of the protein during its biosynthesis. Using site-directed mutagenesis, these two amino acids were interchanged to probe the existence of such an interaction. Thus a double mutant where Asp430 was mutated to Arg, and Arg433 was mutated to Asp was created, and the resultant mutant protein (D430R/R433D) was tested for its ability to be detected in mammalian cells by gel electrophoresis and immunoblotting. Our results show differences between the migration patterns of double and single mutants that are compatible with differences in the glycosylation levels of MRP1. However the fact that D430R and the R433D mutants don't share the same migration pattern, together with the variation in migration between D430 wild type and the double mutant D430R/R433D indicate that the possibility of a salt bridge can be discarded. Supported by CIHR MOP-10519

Pharmaceuticals and Personal Care Products and their effects on humans

Presenter: Alex Neumann, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne

The increased use of Pharmaceuticals and Personal Care Products (PPCP's) has led to an increase in many population health problems. In 1997, 15 – 50 % of women had developed breasts by the age of 8. Ten years prior to this, breast development by the age of 8 was uncommon. There are certain researchers who believe that this may be linked to the pharmaceuticals humans are consuming.

Wastewater treatment plants are a significant gateway by which pharmaceuticals enter the water supply. Many pharmaceuticals find themselves in wastewater treatment plants, however the plants do not target these specific chemicals for treatment. As a result, they are released into the surrounding bodies of water, and accumulate in aquatic animals. When water treatment plants take water from the bodies of water and distribute it for human consumption, humans consume these chemicals.

Many techniques for removing the pharmaceuticals have been tested, but there is still much uncertainty as to which are effective methods. The potential hazards associated with these

chemicals are still uncertain, but the current evidence is indicating that it is very likely that these chemicals can be very hazardous.

The Social Construction of Dysfunction and Disorders: What Role Does the Pharmaceutical Industry Play?

Presenter: Nicole Persall, Psychology / Health Studies

There has been widespread controversy regarding the pharmaceutical industry's motive to promote and sell new drugs pertaining to sexual health. In this paper I will bring up a number of different authors who feel that the definition of 'sexual health' has been purposely redefined in order to create a market for a drug whose need is questionable. This paper investigates and raises questions about the veracity of diseases heavily promoted and marketed by the pharmaceutical industry, such as female sexual dysfunction disorder. Is it truly the female equivalent to male erectile dysfunction? Or is it the avaricious creation of pharmaceutical companies in a sly endeavor to increase sales of products like Viagra? Next, I look at the enormous impact pharmaceutical companies have had on shaping our everyday definitions of what is 'normal' in terms of sexual functioning. Also, the effects of standardizing diagnosis are considered, and finally, I investigate the costs of reducing sexual dysfunction to a physiological cause and how pharmaceutical industries strive to create a universalized, function-focused sexuality in which physiology dictates sexual conduct.

Demographic Changes Affecting Our Pensions

Presenter: Karicia Quiroz, Economics

Faculty Supporter: Dr. Robin Boadway

Our Canadian retirement system contains three pillars, focusing on providing all members of Canadian society with a minimum and guaranteed standard of living for retirement, through direct transfers to help the working poor (first pillar) to Canada Pension Plan payments through mandatory monthly deductions (second pillar) funding current retirees and through tax deductions offered via Canadians' private savings (third pillar).

Yet, with the baby boom generation presently retiring, and the current workforce positively shrinking, how will our monthly paycheck deductions towards Canada Public Pension payments be affected? Did you know that when you are born in 1985, you receive approximately \$0.70 in retirement back from the government for every \$1 contribution made from your current paycheck, and \$0.60 back for every \$1 contribution if born in 1995? These demographic changes are negatively affecting the future returns of our Canada Public Pension payments, despite a +\$150 billion Canada Pension Plan Investment fund and the other two pillars of the Canadian retirement system. Either one improves the second pillar as it is, affecting the other two pillars, or one completely replaces that system with alternative options.

This presentation will focus on the alternative options available and what can be done to mitigate the negative effects of the present demographic changes affecting the status of our Canada Public Pensions.

Session VII: Affiliation and Identity

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

Friday, March 9, 9:15-10:30

Moderator: Dr. Jacqueline Davies, Philosophy

If You Cannot Beat Them, Why Not Have Them Join Up?

Presenter: Kenneth Hall, Political Studies

Faculty Support: Dr. Christian Leuprecht

This paper explores the plausibility of a rather novel solution to the problem of domestic terrorist threats: might the risk posed by individuals from communities that are thought to be prone to acts of political violence and terrorism be mitigated by recruiting to the military members of communities that public and political discourse has deemed a fifth pillar? The military presents a stable, well-paying career to individuals marginalized by their ethno-religious identity that have to this point been grossly under-represented in the Canadian Armed Forces. It can also bring members of these communities into a closer relationship with the state and mainstream society that will foster allegiance, combat alienation, and stifle the desire to commit violence against Canada and its citizens.

Two implications follow for the Canadian Armed Forces from the explanation of the Toronto 18 as a non-peaceful node of an identity-based network. One is that the institution should be cautious not to fall into the trap of a populist vernacular reification of identity that might inadvertently further the community's collective alienation by overtly appealing to "Arabs" or "Muslims". The other is that the military may do well to focus on the equality of treatment within their institution rather than material benefits when attempting to extend an olive branch to Canada's marginalized communities, instead making an emotional appeal based on the common good.

Chinese Canadians: Exercising Social Power through Affiliations

Presenter: Corin De Sousa, History

The Chinese presence within the dominant Canadian host society has been one of struggle and triumph. Racial attitudes caused extreme forms of stereotyping and prejudice against the Chinese residing in Canada. Although many scholars discuss the history of racism against the Chinese in Canada, most leave the Chinese voiceless and do not consider the internal and external powers within the Chinese communities. The Chinese were not defenceless and by creating associations they were able to voice their opinions. Also, by aligning themselves to religious organizations and joining in the military effort, they were able to create their own identity and gain an even footing in the social hierarchy within Canada. Thus, Chinese Canadians have been in full control of creating their own cultural identity within diverse Chinese communities. Chinese associations were established soon after the arrival of the first Chinese settlers in Canada, notably the Chinese Consolidated Benevolent Association (CCBA) which dealt with numerous issues, charities, some of which provided housing, cultural celebration, and much more. The Chinese created a distinct culture, while at the same time becoming a part of Canada's cultural mosaic. Despite deep-seated racial oppression, the Chinese Canadians were able to exercise social power by establishing the CCBA, creating associations and assimilating through religious and military affiliations.

The Complexities of the Internet as a Tool for Development: The Case of Pornography in South Africa.

Presenter: Meghan Donevan, Global Development Studies and Economics

Faculty Supporter: Dr. Marc Epprecht

My thesis (DEVS 502) critiques "practitioners of development" for promoting the Internet as a development tool in Africa while ignoring the issue of pornography. It demonstrates that the increased availability and exposure to pornography in Africa is likely to adversely affect the lives of both men and women. Pornography fails to promote safer sex to a population at significant risk of HIV/AIDS. It perpetuates constrictive notions of femininity and masculinity, portraying men as

conquering the submissive women, while making male satisfaction the only important outcome of sexual acts. Pornography is not only a gender issue, but also a racial issue: it promotes “whiteness” by idealizing the white female body and portraying the limited number of black actors in a brutal, animal-like way. Pornography, thus, is a powerful medium that may prevent a necessary re-socialization among youth in South Africa to combat the ills of racism and gender inequality. Finally, pornography reflects the ways in which the West has historically held the power to influence gender, racial and sexual norms and values. In this sense, pornography can be viewed as another instance of Western colonialism. Through the lens of South Africa I show that the Internet will have negative consequences that need to be taken into account if it is applied as a development tool.

Gender and the surrogacy industry in India: An analysis of exploitation in the production of a child.

Presenter: Karin Forss (exchange student from Uppsala University), Political Studies

Faculty Supporter: Dr. Margaret Little

The aim of this paper is to discuss what moral and philosophical values determine the debate on surrogacy as well as to detect the racist, gender and class oppressive discourses that prevail the surrogacy industry and exploits the surrogates labour. The study examines gestational surrogacy, which is where a couple “rent” the womb of another woman to carry their child. This is a fast growing industry, especially in India, where surrogacy, according to a report from the Confederation of Indian Industry, is estimated to generate \$2.3 billion this year.

The study is divided into two parts. First, it looks at reproduction issues in Western society, where most clients in the surrogacy industry come from. Second, it focuses on the surrogate and the industry in India. The first part problematizes the way our society views reproduction and what stigmas surround the notion of the nuclear family and the “need” for a biological child. The study then examines why so many childless adults now choose to proceed with surrogacy, and why they do this in India, articulating practical issues as well as the discourses of race, colonialism, gender and class that become visible. The focus in India then lies on the surrogate as well as the role of the maternity clinic. The thesis explores the dichotomy that is articulated in the surrogacy industry where the surrogate is simultaneously viewed as an object, a womb with no feelings, and as a subject, a compassionate Madonna that is impossible to objectify.

The Relationship between Self-Verification and Cultural Mosaic Beliefs in Multicultural Groups

Presenter: Allyson Haarstad, Psychology

Faculty Supporter: Dr. Susan Brodt

In previous research, the cultural mosaic model was found to describe multicultural group processes using three factors—cultural diversity, cultural expression and acceptance, and cultural utilization. The current study will test the role of cultural self-verification within multicultural work groups to demonstrate the cultural mosaic model. Given the observed relationship between the cultural mosaic model and team productivity, the study will prime cultural self-verification (or not) through discussion of group members’ cultural backgrounds to establish norms of openness of identity and acceptance of diversity within the group. I predict groups who are encouraged to openly discuss their cultural backgrounds will feel more comfortable utilizing their unique cultural knowledge and expressing innovative ideas which otherwise might not be shared. This will result in greater success during the problem-solving task and cause individuals to work more cohesively and be more inclined to present feasible and innovative solutions to the problem, and to be accepting of such solutions from other group members. It is also expected that participants in the

self-verified condition will rate the experience of working in this multicultural group more positively than participants in the control condition who do not discuss their cultural backgrounds prior to the task. Should this pattern of findings occur, a research application is better understanding of the cultural mosaic construct, and a practical application would be for ways to engender cultural mosaic groups in organizations by encouraging discussion about team members' ethnic and cultural backgrounds in order to achieve greater workplace productivity and a higher degree of job satisfaction.

Session VIII: Recycling, Resources, and Sustainability 1

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

Friday, March 11, 9:15-10:30

Moderator: Dr. Steven Moore, School of Business

Effects of Nitrogen Fertilizer on Switchgrass Productivity and Soil Trace Gas Production

Presenter: Serra Buchanan, Geography

Faculty Supporter: Dr. Neal Scott

Atmospheric greenhouse gas (GHG) concentrations continue to increase and one of the major culprits is the continued elevation and use of fossil fuels for energy. Using bioenergy, a renewable and sustainable source of natural energy, could help to reduce the effect that fossil fuels are having on the planet by slowing the rate of input of atmospheric GHG's. Perennial crops such as switch grass can be grown and used as a bioenergy crop. In some cases, nitrogen fertilizers are used to increase the growth of bioenergy crops with potential negative environmental consequences. For example, nitrogen fertilizer can impact soil chemical processes and lead to an increase in the production of greenhouse gases, mainly N₂O and CH₄. Production of these gases would negate some of the benefits achieved by substituting bioenergy crops for fossil fuels. When I examined the amount of gas flux being produced by switchgrass fields, with 0 lbs/acre, 50 lbs/acre and 150lbs/acre fertilizer treatments we observed, as predicted, an increase in N₂O production with more fertilization. In some cases the increase in N₂O production in the 150lbs/acre treatment was as extreme as being over 200% larger compared with no fertilization. I also observed some very interesting results with methane production, which has been showing production of methane, along with after around 30 minutes of gas collection in a chamber. Based on the results of my research, I have created a cost benefit analysis of using nitrogen fertilizer on switchgrass crops.

A Waste of Space -Solutions to Ontario's Landfill Problems

Presenter: Tiffany Chai, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne

Canada is one of the countries that produce hundreds of kilograms of waste per capita, a number that continues to increase steadily each year. In 2007, our country generated twice as much waste as Japan. Major cities in Ontario, such as Toronto and Ottawa, are facing issues of their landfills reaching its capacity within the next decade. I will research the waste management practices of countries that have a high waste diversion rate and analyze how these practices can be incorporated into Ontario's regulations. The countries I will discuss the background of the practices are Sweden and Finland because of the similarities to Ontario. Each technology and method used will be analyzed, and a discussion will follow on the applicability of use in Ontario.

Informal Recycling In Developing Nations

Presenter: Amanda Hart, Civil Engineering

Faculty Supporter: Dr. Pascal Champagne

The topic of my research is informal recycling with a focus on developing nations. Scavengers are considered people who sort through garbage but not through an organization. There is a negative stigma that is associated with this type of lifestyle. The discussion will explore the benefits of organized informal recycling programs in countries such as Brazil and Nigeria. When informal recycling becomes organized jobs are created allowing for more residents to become employed. Some of the benefits of informal recycling include reducing the volume of waste, the life span of disposal sites is increased as well it helps reduce the amount of methane produced. These programs also allow for certain materials to be discovered which can easily be reused. For example, there are metals that can be sorted through and ultimately sold to companies. Another example would be the organics from the garbage are used in order to support pig farms. This decreases the cost of production for the pig farmers, which allows them a larger profit margin. Also, social, economic, environmental and health issues will be discussed in further detail. Finally, terms will be defined to allow a better understanding of the informal recycling world and how it operates.

Opening the vault: The truth behind genetically modified foods

Presenter: Sean Elizabeth Jackson, Health Studies and Global Development Studies

When it comes to experimentation, informed consent must be given. How will North Americans feel when they find out they have been unknowingly participating in the consumption of genetically modified (GM) foods? GM foods develop global controversies, and have since their introduction into the international food market. Top stories in the news today cover the concerns of GM products facing the environment and its biodiversity; however, they seem to neglect the health risks for humans. This is because most GM food providers do not want possible health risks to get in the way of profit. Therefore, the vault must be opened: Genetically modified foods need to be avoided because of the detrimental health risks associated with their consumption. The health risks regarding genetically modified foods are extremely important because they can be easily prevented if the globe comes together to promote a natural world. It will undoubtedly be difficult because of the invasion of GMOs that has already taken place, but refusing to purchase GM products, at least until they are proven to be safe, is an ideal place to start.

Comparative Efficiency of Municipal Recycling Systems Based on Source Separated or Commingled Collection; with a Case Study of the City Gatineau.

Presenter: Adrian Jorre de St. Jorre, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne

One of the essential steps in an efficient municipal waste management system is organizing the collection and sorting of recyclable materials. Having businesses and residential homes sort their recyclables before collection or collecting all recyclables together and then sorting them at a central plant as well as some other pick up and sorting models each have advantages and drawbacks. This paper will involve a review of relevant academic studies on the topic and a case study of the city of Gatineau, which has recently transitioned from source separated to commingled collection allowing for a comparison of the two systems.

Session IX: Symbol Recognition

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

Friday, March 9, 10:45-12:30

Moderator: Dr. Jill Scott, Languages, Literatures and Cultures

Reflectance Transformation Imaging for Roman Coin Identification: Archaeology and Education

Presenter: Ana Crisan, Classics

Faculty Supporter: Dr. George Bevan

In 2001 the Department of Classics acquired pieces from the Diniacopolous family collection, along with a large number of coins. The majority of these coins were minted in Alexandria and vary in dates from the Hellenistic to the Byzantine period with the bulk from the Roman Imperial Period date range. While some of the coins are in decent condition and their legends and reliefs can be read with the naked eye, most require the use of imaging technology in order to be identified. This presentation will discuss results of a project currently underway to image the coins using Reflectance Transformation Imaging (RTI), a cost effective technique, which has also been used by the department at Catarauqui Cemetery to recover eroded tombstone inscriptions. While some coins were extensively eroded and thus could not be classified, the technique showed impressive results allowing most coins to be identified and dated. The presentation will also outline how RTI can be used in education, as bags of coins can be cheaply acquired by educators, thus allowing students at the primary and secondary school level to actively participate in deciphering corroded coins. This project demonstrates that RTI can be applied to a wide range of artefacts and is a valuable tool in preserving cultural heritage.

Scanning of Face-Scene or Object-Scene Pairs Reveals Implicit Relational Memory

Presenter: Leora Branfield Day, Psychology

Faculty Supporter: Dr. Kari Hoffman (York University)

The hippocampus is thought to play a role in the formation of memories of relations among items in a scene (Cohen and Eichenbaum, 1993). Recently, we described a change detection task in which visual scanning of objects in a scene indicated explicit memory for those objects, and is thought to require hippocampal function (Chau, Murphy, Rosenbaum, Ryan, & Hoffman, 2010). In contrast, a task pairing faces and scenes revealed that the scanning of faces can be used as a measure of implicit memory, yet it, too, is associated with hippocampal function (Hannula & Ranganath, 2009). One difference between tasks is that the latter was never tested with object-scene pairs. In this study, we replicated the face-scene task, and added an object-scene condition to determine if the difference in scanning of previously shown pairs exists for objects-scene pairs and if, as with faces, this bias exists in the absence of explicit recall. Paired items were viewed preferentially, whether the items were faces or objects, and irrespective of whether recall was implicit or explicit. The bias towards the paired image emerged within the first 500 ms of viewing for all pairs, and the protracted response was stronger for explicit than implicit pairs. These results suggest that this task is effective whether using face or object stimuli, and could be used to tease apart the role of the hippocampus in explicit and implicit memory formation. Furthermore, its use of non-verbal measurements makes it amenable for use in animal models.

Authors: Branfield Day, Leora R.; Bartlett, Adrian M.; Leonard, Timothy K. and Hoffman, Kari L.

Facial Recognition and Tracking using the Eigenface Technique

Presenter: Mallory Ketcheson, Computer Science

Faculty Supporter: Dr. Michael Greenspan

Eigenfaces is a computer vision technique developed in 1991 by M. Turk and A. Pentland used to distinguish an image of a face with only a single 2D image. The purpose of this project was to develop a system capable of automatically recognizing and tracking a face throughout a real-time video using the Eigenfaces technique. These techniques take advantage of the assumptions that faces share relatively the same features and are usually upright. The Eigenfaces technique transforms several images of individual faces from an image into vectors based on the pixel values contained within the image. The vectors are then used to create an n-dimensional space in which future images can be placed to determine the likelihood the image contains a face. This project segments a single image into a grid and applies the Eigenface technique to each segment rather than the entire image. The result of this process is the successful application to each image in a video to track the movement of a face throughout the video in real time.

High Accuracy Photogrammetry of Historic Rock Art

Presenter: Marla MacKinnon, Classics

Faculty Supporter: Dr. George Bevan

The petroglyphs of Petroglyph Park, Peterborough, created by the Algonquin Peoples between 900 and 1400 A.D., were documented in 1983 by the Heritage Recording Directorate of the Government of Canada. With the aim of rerecording the glyphs again at a later date to monitor the conditions and weathering, several sets of photogrammetric stereo pairs were taken of the site using Zeiss UMK and a Wild P-31 film cameras. After this project was completed, the site became designated as sacred and photography was no longer permitted, thus rendering the completion of a second recording of the site all but impossible. Therefore, the photographs taken of these magnificent petroglyphs in the 1980s are the most recent documentation available. Using the ADAMTech Mine Mapping Suite, developed in Perth Australia for the mining industry, I was able to bring these archival photos to life by creating dense 3D models that rival those produced by LiDAR. I used the photos, digitized in Ottawa on a Wehri RM-6 photogrammetric scanner, to create 3D models of the glyphs. A similar Federal project from Writing on Stone National Park in Alberta also used film photogrammetry to record the glyphs at that site in 1982. From these images as well I was able to compile 3D models. It is hoped that by scanning the original glass-plate negatives from the 1980s, and not the film copies, as we have done thus far for both projects, measurement data of even greater accuracy (down to 60um) and density can be achieved.

Is There a Common Network for Processing Reward and Aversion in the Brain?

Presenter: Jiameng Xu, Life Sciences

How do our brains process and attach positive and negative value to the objects around us, the sensations we feel, and the experiences that we have? One method of examining these questions is to detect, using functional magnetic resonance imaging (fMRI), which areas of the human brain are activated when subjects are exposed to rewarding and aversive stimuli. Although many fMRI studies have concentrated on identifying a network of areas that become active in processing either reward or aversion, there is evidence of significant overlap between the "reward" and "aversion" networks, suggesting that the brain might process rewarding and aversive stimuli in a similar manner regardless of valence. Thus, a meta-analysis of fMRI studies involving rewarding and aversive stimuli was undertaken to determine the areas of the brain that are commonly and

differentially activated by reward and aversion. The preliminary results indicate that regions of the prefrontal cortex, anterior cingulate cortex, amygdala, nucleus accumbens, hippocampus, and basal ganglia were commonly activated by rewarding and aversive stimuli, while areas including the insula, midcingulate cortex, and parts of the hippocampus were differentially activated. Locating such commonalities and differences might help in our understanding of how the brain ascribes value to our environment.

Multi-Spectral Imaging for Archeology

Presenter: Ian E. Longo, Classics

Faculty Supporter: Dr. George Bevan

Until recently multi-spectral imaging in the field of archaeology has been vastly under-utilized due to the great expense of using specialized films and cameras. A great deal of data remains hidden when observing artefacts such as papyri and pottery shards (ostraca) solely under visible light (400-700nm). The writings on these artefacts are often faded and illegible resulting in much of the information they store being lost. Our approach has been to use modified commercial cameras along with a Coastal Optics 60mm multi-spectra lens to enhance the contrast of the text through the use of Ultraviolet (300-390nm) and Infrared (700-1000nm) Reflectography and computer post-processing of the RAW images. The results are stunning. A great deal of the text on these artefacts can be made legible and subsequently studied. The underlying principle comes from the fact that pigments and minerals reacting differently to the specific bandwidths of UV and IR light, thereby producing an enhanced contrast version of the once illegible artefact. This information can be later recorded and used to further the understanding of the object itself and the civilization of which it originated. In addition, this photographic technique can be further adapted to study non-textual artefacts such as paintings. These results are consistently obtained, readily reproduced and can be adapted to study all text upon papyri, ostraca and other cultural artefacts. Moreover, the system can be easily moved onsite to museums and galleries

Session X: Education

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

Friday, March 9, 10:30-11:15

Moderator: Mr. Robert Burge, Registrar, Education

What Determines Educational Performance?

Presenter: Andrea Gori, Commerce (exchange student from Bocconi University)

In a period where shrinkage of the public sector is without doubt at stake, this research highlights the importance of targeted public interventions aimed at improving the national educational performance on a cross-country basis. Starting from a general idea on some economic and social explanatory variables thought to affect the average PISA score, we find a coherent output from the conducted factor analysis. A statistical regression analysis highlights the importance of the public intervention at different levels of the educational system and the investments in social development, both running parallel to the effort in filling the inequality gap in the country. The most striking result from our research is that wealth inequalities, captured by the Gini coefficient, seem to be as relevant a cause of poor educational performance as the other factors, when compared at an international level. Based on a straight-forward but cogent statistical procedure, this research attempts to find compelling suggestions for the formulation of macroeconomic and social policies which have, as their main goal, the improvement of national educational performances in a context of global competition.

Blended Learning & the Redesign of Psyc 100

Presenters: Jordan Bawks and Sammy Boggs, Psychology

Faculty Supporter: Dr. Jill Atkinson

A great deal of research has shown that lectures with large class sizes struggle to promote active learning resulting in poor knowledge acquisition and retention as well as limited conceptual understanding. Based on the benefits observed for blending learning models and small group learning in the literature, Introductory Psychology (Psyc 100) at Queen's has recently undergone a massive redesign with the goal of improving the student experience.

The structure of Psyc 100 has been changed from 3 hours of traditional lecture a week to 1 hour of lecture, 1 hour of online learning, and 1 hour of learning lab per week. The goal of this redesign is to increase student engagement through learning labs, grant more freedom to pursue the course material via interactive online tasks, and delve deeper into exciting and relevant topics with more in-depth lectures.

The labs are specially designed with a student-centered approach that helps learners to engage with fellow students and the material through group discussions, quizzes, games, and debates. Upper year students majoring in Psychology comprise approximately 2/3 of the tutorial facilitators for these labs, which provide undergraduate students with an important opportunity to take a more active role in the Psychology department and develop a love for teaching.

We will present the research behind this redesign, demonstrate how it has been incorporated into the new Psyc 100 curriculum, and share our experiences as student facilitators through the ongoing refinement of the course.

THATCampQueensU: Bringing Digital Humanities to Queen's

Presenter: Maya Bielinski, English Language and Literature

Faculty Supporter: Dr. Leslie Ritchie

There is a new generation of scholarship in the humanities, and it is rooted in twenty-first century technology. In response to what some have called the "crisis in humanities," scholars have begun to tackle their research questions armed with digital tools and a strong sense of collaboration in order to think across disciplines, allow for greater accessibility, and ultimately to create bigger impact. Digital Humanities, or DH, is this exciting and growing field--or maybe methodology--used by humanities scholars to share and create scholarly content.

Despite the growing fervour for DH across Canada, many scholars at Queen's have yet to take advantage of the opportunities for research and teaching afforded by DH. I believe that by bringing together Digital Humanities practitioners at Queen's University, more scholars, faculty, and students would learn about and engage in dialogue about fostering and furthering DH scholarship across all disciplines. The best way to begin, I believe, is by hosting THATCamp at Queen's. The Humanities and Technology Camp is an open, inexpensive meeting where humanists and technologists of all skill levels learn and build together in sessions proposed on the spot.

Session XI: Resources, Recycling, and Sustainability 2

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

Friday, March 9, 1:30-3:15

Moderator: Dr. Steven Moore, School of Business

Community Owned Renewable Energy: a Case for Economic Localization in Ontario

Presenter: Philip Ballyk, Commerce

Faculty Supporter: Dr. Steven Moore

Ontario is making some strides to promote renewable energy generation, but policies and incentives are ignoring the merits of scale of two renewable energy deployment options: community owned renewable energy and large-scale absentee owned renewables. This literature review discusses the sustainability of each option in terms of the three pillars of sustainable development: economic, environmental and social. Community owned renewable energy (CORE) projects are found to be more sustainable due to their participative process and distributive outcome. Studies from Europe and the UK show that CORE decreases opposition to renewable energy integration, has more economic impact than the centralized approach, and is a socially cohesive and empowering undertaking. The policy environment in Ontario, however, does not promote the growth of this deployment method. Changes must be made to transmission incentive structure for utilities to consider distributed generation, and laws concerning the limits of co-operatives as financial institutions, among many other changes, to provide a suitable avenue for sustainable deployment of a new energy system based on renewables.

Mining of Landfills for the Recovery of Resources

Presenter: Chris Jungkuz, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne

There are many opportunities associated with the excavating of landfill sites. Many landfills were filled prior to large efforts in recycling and diversion tactics, which leads to many useful and valuable materials being hidden away from use. The prospect of reclaiming materials that were once buried relieves the need to use as much virgin materials for manufacturing and production processes. Organic materials that are recovered through landfill mining can be used to generate energy, or be utilized as cover material for the disposal facility. Through the removal of materials, more capacity can be generated within solid waste disposal systems, which can prolong the operating life of the facility, reduce the need to transport waste to other regions for disposal and ensure a longer period for which new landfills can be sited. Landfill mining is an option to recover valuable materials, storage capacity and generate energy but must be done where it is economically, socially and environmentally appropriate.

Mine Tailing Control and Remediation

Presenter: Vanessa Lee

Faculty Supporter: Dr. Vicki Remenda

This paper is based on a mine located in northern Ontario, specifically the discharges within the mine tailings, the consequences of unsafe levels of chemical discharge and possible preventative methods. It discusses the location of the mine and surrounding area, the area that it covers, in particular the area of the tailings pond and the location of discharge associated with the tailings pond. The processes used in the mine will be reviewed such that the contaminants within the discharged water and the storage and treatment methods used are correlated to the hazard they pose to people and the environment. Based on the recorded data and regulations set by the Ministry of the Environment about the discharges it will be determined if there is any potential for exceeding the set regulations and suggest possible methods of decreasing the probability of this event occurring with the use of a permeable reactive barrier as a passive aid.

Comparing Waste Systems in Canada and Sweden

Presenter: Rami Maassarani, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne

Canada and Sweden are two countries that are actively involved in environmental protection and both go as far as to declare themselves among the most environmentally friendly countries in the world. However, a report issued by the Organization for Economic Cooperation and Development (OECD) ranked each participating country in twenty five key environmental factors and saw Canada place 28th overall out of the 29 participating countries. Sweden on the other hand saw itself coming in at a respectable 10th (Boyd, 2001). The similarities between the two countries in terms of Human Development Index (HDI), Gross Domestic Product (GDP), general climate and interest in environmental protection would at first impression imply similar standards of living and therefore waste production. However, the numbers clearly demonstrate the Sweden is well ahead of Canada in terms of generating and managing its waste.

The purpose of this study is to conduct a comparison of waste generation and composition between the two countries on a national scale as well as on a municipal one. Determining the differences between Canadians and Swedes from a waste generation perspective will highlight the cultural differences that create this phenomenon. On the other hand, the analysis of several different municipalities in each country will demonstrate the effects that policies can have on the way waste is managed and ultimately, how it will affect the environment. These analyses will help determine whether or not Canada can imitate Sweden and make its current waste management systems more efficient.

Leachate Treatment Considerations in Cold Climates

Presenter: Sarah Partanen, Engineering Chemistry, Civil Engineering.

Faculty Supporter: Dr. Pascale Champagne

When water percolates through the solid waste in a landfill a leachate is generated that may contain dissolved organic material and heavy metals. Leachate can be treated in a variety of ways before being discharged, but parameters such as temperature can have an effect on the way leachate treatment is approached. In climates where the ambient temperature decreases during the winter months the leachate treatment process must be adapted to ensure the effluent being discharged meets all regulatory standards. This may include adding additional insulating elements to current technologies, or changing the technology used all together. This presentation will address the current issues associated with leachate treatment in cold climates including the effect of temperature on nitrification and denitrification. It will also examine the existing treatment technologies that are applicable for leachate treatment in cold climates and discuss their effectiveness based on the quality of the effluent being discharged.

Land Use Change Effects on Soil Quality in Prince Edward County, ON

Presenter: Elizabeta Kjikjerkovska, Geography

Faculty Supporter: Dr. Neal Scott

Soils play a key role in Earth System function. When original vegetation cover is converted to cultivated land, soils often become degraded and lose their productivity potential. We examined the effects of land-use change on a clay/clay loam soil on a farm in Ameliasburg on the northern part of Prince Edward County. Three cover types were examined: perennial sod (for lawns), perennial switchgrass (potential bioenergy crop) and undisturbed forest. For each soil type, cores to a depth of 40cm were collected along three random 30m transects (at 8, 16 and 24m), then divided into 10cm increments and combined along one transect according to depth. Soil quality was assessed by analyzing various soil physical and chemical properties. Bulk density was almost two-fold higher (1.5 vs. 0.82 g/cm³) in both grass systems compared to the forest, but only in the 0-10cm layer, likely due to surface compaction associated with land management. Soil pH was

slightly lower in the forest compared to the switchgrass field. The sod and switchgrass fields showed losses of ~33% and ~53% organic matter, respectively in contrast to the forested area. The largest differences for organic matter and total carbon were in the top 20cm. Soil C: N ratios were highest for the forested site and lowest for the sod field. Although perennial grass systems often enhance soil quality compared to extensively tilled sites, it appears that long-term (10y) sod production has led to a decline in some, but not all, soil quality measures, particularly soil organic matter and carbon content.

Session XII: Affiliation and Identity 2

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

Friday, March 9, 1:30-3:00

Moderator: Dr. Susan Wilcox, Gender Studies

Fighting For Ireland: The Creation of Northern and Southern Irish National Identity during the First World War

Presenter: Bryan McClure, History

The decade of 1912-1923 in Ireland was a period of transition, change, and bloodshed. By the end of the period Ireland had gone from a British colony to two separate nations, the Irish Free State and Northern Ireland. While the actions of radical ultra-nationalists and unionists insured this physical partition of Ireland, the psychological and cultural divide that dominates Irish society was also created during this period. The divide between north and south was created by the epic struggle of the First World War. Both northern and southern Irish attempted to use the war to reinforce their position in the new Ireland that was to be created at the war's conclusion. The results were drastically different for both sides as the south was driven into the arms of the ultra-nationalists and the north into the radical unionists. By looking at public monuments, widespread stereotypes and cultural works, the separation between northern and southern Ireland becomes obvious as each side interpreted the war on opposite ends of the spectrum. The south, with its republican-nationalist leaders choosing to ignore the war and the soldiers contributions to the creation of the new Irish state to the point where the nation now suffers from a "collective amnesia". In the north, the unionists took their role in the war to become one of the foundation stones in their culture and identity. Such veneration led the unionists to develop a culture of sacrifice and bloodshed, which has contributed to the violence in Northern Ireland.

Blue Collar Brawlers and Harley Vagabonds: Masculinity in the Tavern and on the Road

Presenter: Graeme Melcher, History

Faculty Supporter: Dr. Martina Hardwick

Outlaw motorcycle clubs, such as the Hells Angels, provide a modern interpretation of male working-class culture. Most notably, 19th century working-class taverns and fraternal orders can be seen as forerunners to the culture of outlaw motorcycle clubs, or 'bikers.' Within the confines of these spaces, men were able not only to learn male behaviour from others, but to reinforce their own masculinity through ritualized acts, such as drinking, singing, and fighting, resulting in an earned image for the culture and the space as one of violence, filth, and danger to those outside of the culture.

This cultural reputation has carried over into the modern context of bikers. Originally formed to provide an adventurous outlet to, predominantly, young white men, biker culture has now become a complex and powerful subculture and image. Where early tavern culture was practiced largely in private, biker culture is defined and practiced in the public space, reinforcing its own

reputation and image in the process. Despite, or perhaps because, of this public image, bikers have become deeply rooted in our collective subconscious, and represent, to some, a modern reinterpretation of the lone cowboy, making their own society in the face of all challenges. Bikers provide a modern examination of gendered spaces and masculinity. They have an element of danger and homosocial activities that make them particularly appealing to men looking for a masculine identity within a culture that they otherwise found less than welcoming – and which, in turn, did not welcome them.

Cultural Mosaic Beliefs and Group Performance as Influenced by Attachment

Presenter: Kathryn Papke, Psychology

Faculty Supporter: Dr. Susan Brodt

The purpose of this study is to test how group differences in attachment style interact with the degree of cultural mosaic beliefs present in multicultural groups to dramatically alter identification, trust and cooperation among group members (Brodt, Adair & Lituchy, 2008). Firstly I hypothesize that priming attachment style among group's members will lead to changes in their group experience, particularly their cultural mosaic beliefs. The three different attachment styles will have different effects on their cultural mosaic beliefs, measured using an existing scale (Chuapetcharasopon, Brodt, Adair, Lituchy, Neville, & Lowe, 2011). Secondly I hypothesize that priming attachment style among group members will lead to differences in the number of overall ideas and the number of culture-related ideas generated in a group brainstorming task. Attachment styles can change group interaction, causing these differences in group performance. Thirdly I hypothesize that the effect of attachment style on the number of overall ideas and number of culture-related ideas will be moderated by mosaic beliefs. If attachment style does have an effect on performance, it will depend on the interaction of attachment style and the process of establishing mosaic beliefs within a group. The data is currently being collected. The outcomes of this study are valuable for research as they will help our understanding of the cultural mosaic construct as it relates to multicultural groups in the Canadian workplace. It will also help our understanding of multicultural workgroups and the role attachment style plays in a group setting.

The Possibility of Public Reasons

Presenter: Elyse Platt, Philosophy

As we navigate our way through the world we are faced with difficult decisions, choices, and situations, which force us into action. Sometimes choosing one course of action over another is an easy process; at other times we must stop and evaluate our options. Either way, we hope that we make our decisions because of good reasons — reasons which appear not only good to ourselves, but to others around us as well. We often feel a peculiar tension between an inclination to hold reasons as extremely personal, and a desire for them to hold moral, normative weight in the public arena. In her paper "The Activity of Reason" and her book *Self-Constitution*, contemporary philosopher Christine Korsgaard offers an illuminating perspective on the public nature of reasons, coming to the alarming conclusion that my reasons are your reasons. Although the belief that all reasons are public may seem at first worrisome, for we all have projects and relationships which seem to us very private, I will demonstrate how Plato's constitutional model of the soul provides a system of making sense of these private relations and meet skeptical challenges proposed by Korsgaard's contemporaries. Understood in this manner, I will elucidate the relationship between reason and desire and reinforce the necessary role public reason plays in both personal integrity and the possibility of shared, normative, moral deliberation.

Social Capital and Residential Agency in Pujiang New Town, Shanghai

Presenter: Carolyn Richardson, Global Development Studies

Faculty Supporter: Dr. Paritosh Kumar

Although it barely registered in social media and current news in North America, the Shanghai 2010 World Expo was the most expensive urban reconstruction project in Chinese history and also caused the largest human relocation project in Shanghai history. To make way for the Expo, over 18 000 families- an estimated 55 000 people- were relocated to the outskirts of Shanghai, away from their homes, communities, social connections and basic services. Of these residents, 25 000 were relocated to Pujiang new town: a brand new town constructed for this occasion by the Shanghai government. Although the government and contracted urban planners built the town, it is the relocated residents who are building the community. Using personal interviews that I and my Shanghainese partner conducted with the residents of Pujiang new town, we aimed to find out how residents are regaining the "social capital" that was lost during their forced relocation, and how their "individual and collective agency" prevents them from being seen as victims of a strong centralized government. In order to understand how this unique case of urban development was created, I will also be explaining the historical causes of the project, and its social and political consequences. However, it is the overarching question of "how does China see urban development, and why?" that I wish to answer.

White People Ain't Left Us Nothin' But the Underworld: Historicity, Race and the American Dream in Ridley Scott's *American Gangster*

Presenter: Laura Sampson, History

Released in 2007, Ridley Scott's *American Gangster* tracks the career of Frank Lucas (Denzel Washington), who dominated the Harlem drug trade in the 1960s and 70s through his monopoly over heroin, which he imported directly from Vietnam and Thailand. The film follows the character of Detective Richie Roberts (Russell Crowe), who led the police task force ultimately responsible for toppling Lucas' regime. This paper investigates the historical validity of the film, taking into consideration the consultant role Roberts and Lucas adopted during production alongside the political implications of Scott's decision to cinematize (and so implicitly condone) the life of a convicted drug lord and accused murderer. It examines both filmic elements of music, casting and cinematography as well sociological concerns of race, space, masculinity and class in order to determine whether the film realistically portrays the lived experience of gang members and Harlem residents alike. Moreover, it considers the film's political backdrop and its engagement with events like the Vietnam War, the Civil Rights Movement and the 1970s recession. Ultimately, the paper concludes that despite Scott's efforts to undermine traditional iconography by portraying Lucas as a complex, rational and respected outlaw-businessman, the narrative's lack of critical engagement with the socio-economic context of its era ultimately render it presentist in style, content and intention.

Session XIII: Poster Presentations

Queen's Learning Commons, Stauffer Library

Presenters will be present at posters Friday, March 9, 11:30-1:00

Posters will be on view March 8 & 9

1. Effect of Gender Cues in Audio Narratives on Same-Gender Attracted Women's Psychophysiological Sexual Arousal

Presenter: Katrina Bouchard, Psychology

Faculty Supporter: Dr. Meredith Chivers

The purpose of my honours thesis project is to gain further understanding of subjective and genital arousal patterns of women who have varying degrees of same-gender attractions. While other-gender attracted women show a category-nonspecific or generalized pattern of sexual response to their preferred and nonpreferred gender, same-gender attracted women show a category-specific pattern of responding, with significantly greater sexual response to their preferred gender, when exposed to low-intensity audiovisual stimuli (Chivers, Seto, & Blanchard, 2007). Past research has examined same-gender attracted women's sexual responses to audiovisual stimuli (Chivers et al., 2007) and other-gender attracted women's sexual responses to audio narratives (Chivers & Timmers, in press); however, no research to date has focused on same-gender attracted women's sexual responses to audio narratives, which is a less intense stimulus modality (e.g., Heiman, 1980). Study procedure involved presentation of sexual and nonsexual audio narratives, which described interactions with male and female partners, to women with varying degrees of same-gender attractions. I will examine the category-specificity of same-gender attracted women's genital and subjective sexual response. I expect that same-gender attracted women will have a category-specific pattern of sexual response, with significantly greater genital and subjective sexual arousal to sexual stories featuring a female partner. Also, I expect that genital and subjective arousal to sexual stories featuring a female partner will increase with degree of same-gender attraction.

2. The Effects of Sociosexual Orientation, Gender and Relationship Context Cues in Audio Narratives on Heterosexual Men's Genital and Subjective Sexual Response.

Presenter: Jenna Brandon, Psychology

Faculty Supporter: Dr. Meredith Chivers

Past research suggests that heterosexual men show a category-specific pattern of sexual arousal, showing greater arousal to stimuli depicting women than those depicting men. Gender is not, however, the only factor affecting sexual arousal in men. Research has shown that men regard relationship context as an important factor in sexual arousal. Additionally, men show greater sexual arousal to novel than to familiar sexual stimuli. Sociosexuality, the preference for committed or uncommitted sexual relationships, affects behaviour and partner preferences. The current study investigates the relationship between sociosexuality, gender cues, relationship context cues, and sexual arousal in men by assessing 25 heterosexual men's genital and subjective sexual arousal to 18 audio narratives describing sexual or neutral encounters with female and male strangers, friends, or long-term relationship partners. I expect that heterosexual men will show greater subjective and genital arousal in response to stimuli depicting a sexual encounter

with a woman than to stimuli depicting a sexual encounter with a man, replicating previous research. I hypothesize that there will be an interaction between gender cues and relationship context, such that men will show greater sexual arousal to stimuli depicting novel female sexual partners (strangers and friends) than to stimuli depicting familiar female sexual partners (long-term partners). I predict that higher sociosexuality scores, indicating a greater preference for uncommitted sexual relationships, will correlate with greater sexual arousal to uncommitted relationship contexts (strangers or friends), whereas lower sociosexuality scores, will correspond with greater sexual arousal to the committed relationship context (long-term partner).

3. **Clinical Trials Knowledge in Oncology Patients: a Comparison of Actual Knowledge versus Trialists' Priorities.**

Presenter: Paul Cameron, Medicine

Background: Advancements in oncology depend on clinical trials, yet recruitment to trials remains poor. Previous efforts to increase enrolment by providing educational materials to patients have improved patient understanding of trials, but not recruitment. To understand the clinical trials knowledge gaps among oncology patients, surveys of patients and trialists were conducted and compared.

Methods: Patients completed a questionnaire measuring their understanding of key concepts in clinical trials. Twenty-two "true/false/do not know" knowledge questions, two 5-point Likert opinion questions, one free-text space and demographics were collected. Trialists (nurses and physicians) completed 13 five-point Likert scale questions plus free-text space to measure the importance they placed on patient knowledge of specific topics. The relationship between what trialists valued and actual patient knowledge was compared.

Results: Patients thought they had a good understanding of clinical trials (50%) however this apparent understanding of clinical trials was not reflected in the scoring as only 58.3% (SD 23.5) of questions were answered correctly. There were positive associations shown between education level, personal belief of understanding and willingness to join a clinical trial with percentage of correct responses ($p=0.006$, $p<0.001$, $p=0.002$ respectively). For topics given high knowledge priority by trialists, patients gave correct answers for less than 50%.

Conclusion: Among patients with cancer, there is a poor knowledge of clinical trials and a gap between what trialists think patients ought to know and actual patient understanding. These results support the development of educational materials on clinical trials for oncology.

4. **Adaptive Gaze Control in an Observational Learning Task**

Presenter: James Kim, Psychology

Faculty Supporter: Dr. Randy Flanagan

The purpose of this study was to examine factors that influence how people look at objects they will have to act upon while watching others interact with them first. We investigated whether including different types of task-relevant information into an observational learning task would result in participants adapting their gaze towards an object with more task-relevant information. The participant watched an actor simultaneously lift and replace two objects with two hands then was cued to lift one of the two objects. The objects had the potential to change weight between each trial. In our cue condition, participants were cued to lift one of the objects every single time. In our object

condition, the participants were cued equally to act on both objects; however, the weights of only one of the objects would have the potential to change. The hypothesis in the cue condition was that the participant would look significantly more at the object being cued. The hypothesis for the object condition was that the participant would look significantly more (i.e. adapt their gaze) at the object changing weight. The rationale behind this is that participants will learn to allocate their gaze significantly more towards that object so they can gain information about its properties (i.e. weight change). Pending results will indicate whether or not this occurred, and has implications for understanding eye movement sequences in visually guided behaviour tasks. The outcome of this study also has implications for the mechanisms of eye gaze with respect to social learning tasks.

5. Does It Matter What Your Employees Do Outside of Work? - Off-Duty Conduct and its Implications for Organizations and their Employees

Presenter: Matei Olaru, Commerce

Faculty Supporter: Dr. Kate Rowbotham

This research is among the first to explore the phenomenon of off-duty conduct and its implications for organizations and their employees. This research reviewed cases of off-duty conduct to understand the nature of conduct that faced arbitration, the discipline imposed for the conduct, and the arguments made by the parties about the impact of the conduct on the organization itself.

In 1967, a case in Ontario (Re Millhaven Fibres Ltd. & Oil, Chemical and Atomic Workers I.U. Loc. 9-670, [[1967] O.L.A.A. No. 4]) set out five factors to evaluate the impact of an employee's off-duty conduct on the organization. Analysis was based on explicit mention of one or more Millhaven principles.

The research included 116 diverse Canadian arbitration cases. Examples of infractions in the sample pool include: theft, drug trafficking, vandalism, assault, tax fraud, murder, sexual assault, drug manufacturing, impaired driving, political protest, and defamatory statements.

Trend analyses led to the preliminary conclusion that employers will use reputational damage (one of the five Millhaven principles) as an umbrella defense in arbitration. These findings raise the question of the effectiveness of the reputation Millhaven principle as a valid argument. The initial findings from this research also shed some light on organizations' reactions to the off-duty conduct of their employees. Further research of interest will include a larger sample with reputation specific grievances to determine if an abnormally large number of reputation-based grievances are allowed.

6. An Investigation of the Spatial Differences in Mercury Burdens of Small Fish in a St-Lawrence River Impoundment Reservoir: the Role of Water Level Fluctuations

Presenter: Michele Parisien, Biology

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

In many hydroelectric reservoirs across Canada, fish exhibit elevated mercury burdens. This is thought to occur due to the flooding of soil with water level fluctuations. Periods of high water level may cause mercury from shoreline soil to be released into the water, which may make it available for methylation by sulfur-reducing bacteria in the sediment and phytoplankton on plants. The amount of methylmercury produced during periods of high water level may depend on the topography of the shoreline; if the shoreline has a gentle slope, more of its surface area would be covered during rises in water level than if the shoreline has a steep slope. I hypothesize that bays within a reservoir that have a

gentle slope and a relatively large amount of vegetation (vegetation provides habitat for periphyton) will have more mercury than steeply-sloped bays with little vegetation. To test this hypothesis, I have collected 10 each of the 3 most abundant fish (≤ 100 mm) from 3 bays in eastern Lake St. Lawrence (an impoundment reservoir with water fluctuations ≤ 2 meters throughout the year) at Massena, NY. I will use stable isotopes to infer the trophic level and food web of each fish in order to determine spatial patterns of mercury distribution. This study may improve our knowledge of mercury methylation patterns in water reservoirs, and provide us with information necessary to properly manage the St-Lawrence River water reservoirs.

7. The British Migration State: Britain's Internal Controls on Immigration Through Welfare Policy

Presenter: Alexandra Petre, History

Faculty Supporter: Prof. Timothy Smith

By looking at the main trends and major changing points of internal immigration control, this project highlights the way in which the social security system has been transformed to become a tool of governmental policy enforcement rather than the repository of universal rights ideology. The shift in the value placed on and treatment of migrants over the past 30 years has been substantive. Once a necessary and sought after supply of labour and demographic growth, newcomers have become a stigmatized ethnic category, a danger to societal cohesion and a parasite on the welfare system. In order to constantly manage and monitor them, the government has exploited the close relation between benefits and immigration to create an unstructured, yet increasingly visible, internal control system. An analysis of policy will show how every act slowly increases the resources allocated for direct enforcement of immigration controls by bringing new employees into the network of those responsible for indirect enforcement such as immigration officers, police, health or education staff, or even employers. By spreading the responsibility for enforcement among a variety of agencies (both state and private) whose concern is not immigration, the British Home Office created a machinery specifically designed to have power over every aspect of an immigrant or asylum seeker's experience in the United Kingdom.

8. Why is it so Challenging for Adults to Acquire a Second Language?: An Evolutionary Perspective

Presenter: Cristiana Mergianian, French Studies

Many aspects of human behaviour and human phenomena can be analyzed using Charles Darwin's theory of evolution by natural selection. Darwin's theory states that the traits present in human ancestors that left behind the most descendants are the very traits that are passed on to future generations. The trait that will be examined in this poster is second language acquisition. It will explore the reasons why it is so difficult for adults to learn and master a second language. Our earliest ancestors had no linguistic ability; therefore, we developed the anatomical features that allowed for spoken language. These changes allowed for rapid language acquisition in young children up until adolescence, but did not support such language acquisition in adults. Our evolutionary past as nomads and hunter-gatherers ultimately explains this phenomenon. The nomadic society of humans was small in size, which led to a lack of inter-cultural contact. There was thus no incentive to learn to communicate with individuals whose language differed from one's own. In addition, the short life expectancy of our ancestors left little time to become fluent in

another language. Finally, in situations of inter-cultural contact, the most violent group prevailed. It is important to understand that the challenges of adult language acquisition have an evolutionary basis because it will allow us to design effective language acquisition techniques.

9. Seashells in the Jordanian Desert: a Cross-Cultural Analysis

Presenter: Samantha Rice, Classics

Faculty Supporter: Dr. Barbara Reeves

The remains of ancient communities have been found at Wadi Ramm and Humayma, Jordan in the midst of what is now the Jordanian desert. In past times these sites were located along caravan routes and were populated by Nabataean, Roman, Byzantine, and early Islamic peoples. Despite the fact that these sites are located tens of kilometers from the seashore, seashells are frequently found in the layers associated with the different population groups. As of yet, shells from the 1996-1997 excavations at Wadi Ramm and from the 2008-2010 excavations at Humayma have not received in depth analyses allowing them to be correctly identified, quantified, and associated with significant archaeological contexts. Archaeomalacology (the study of molluscs in archaeological contexts) is a vital part of deciphering ancient human diet and activity. It is also critical in determining past environments and transportation systems. Clearly these shells came from the sea, but how did they get to these remote desert locales? Based on the preliminary descriptions provided by the field excavators, the photographs of the Wadi Ramm shells, and the actual Humayma shells which are at Queen's, I am creating a catalogue to identify, describe, and quantify the variety of mollusc species present. This catalogue incorporates all of the significant data in one place, thus allowing me to look for patterns in the frequency, condition, and probable function of the shells. This analysis will lead to a better understanding of the diet and cultural practices of the different ancient inhabitants at Wadi Ramm and Humayma.

10. Women and Poverty: The Feminization of Urban Poverty in Canada

Presenter: Laura G. Ritenburg, Gender Studies

Poverty is disproportionately experienced among men and women. Gender plays a significant role when examining the effects and problems that poverty poses. While poverty can be experienced in differing extremes, it is women who suffer higher poverty rates in almost all societies (Christopher et al.). It is people with disabilities, recent immigrants, and racialized men and women who face additional disadvantages and "all of these groups have extremely high rates of low income and, in all of them, women are the most vulnerable" (Townson). In this paper I discuss how the 'feminization of poverty' has created a situation where the number of women in poverty far outnumbers that of men, and how the discourse of feminized poverty is directly affected by the processes and structures of social exclusion. I argue that gender significantly influences the experience and response to urban poverty in Canada through unequal caregiving responsibilities, the dynamics that surround pay inequality, and inadequate government programs.

11. Traditional Knowledge and Modern Agriculture

Presenters: Colin Robinson, Helen McConnell, Raeya Jakiw, Environmental Studies

Faculty Supporter: Dr. Gary Van Loon

As part of our studies in ENSC 315 "Global Food Securities" we are conducting research

upon the topic of how traditional ecological and agricultural knowledge and practices can inform and shape sustainable modern agricultural (crop and livestock) strategies in the context of increasing global food demand and decreasing agricultural resource availability. We are using “Traditional Knowledge” as an umbrella term that encompasses agricultural practices spanning from ancient aboriginal knowledge to just before the baby-boomer-incited spike in global food demand. Through rigorous literature review of primary and secondary documents, we are exploring practical traditional knowledge and ecological paradigms and applying them to modern agricultural operation models. We aim to highlight the difficulties that arise in striving for a traditional knowledge-informed sustainable agricultural model, but also to emphasize the benefits this traditional knowledge can provide in the ongoing global food crisis. Through our research, we ultimately hope to explore a workable solution to the over-exploitive agricultural practices of the modern world that is informed by traditional ecological/agricultural knowledge and ecocentric paradigms.

12. Evaluation of Optimal Storage and Transport Medium for the Detection of Group B Streptococcus in StrepB Carrot Broth

Presenters: Grant A. Trotman and Dien Bard and J. Raney, Biomedical and Molecular Sciences, Kingston General Hospital, Pathology and Molecular Medicine

Group B streptococcus (GBS) is the leading infectious cause of morbidity and mortality among newborns in the USA and optimal detection of GBS colonization in pregnant women is paramount. In 2010, the Centers for Disease Control and Prevention (CDC) revised consensus guidelines for the prevention of GBS disease to include identification by chromogenic media such as StrepB Carrot Broth (CB). However, limited data are available to determine the optimal storage and transport medium (TM) required to optimize GBS survival. We compared ESwab and Amies TM to recover GBS in CB for up to 144 h at 40C, 210C and 240C. 50 isolates of GBS from vaginorectal swabs were evaluated. 100 µL aliquots of 10³ CFU/mL suspensions were inoculated onto Amies and ESwab TM and stored at the evaluated times and temperatures. At 24 h time periods, Amies and ESwab TM were inoculated into CB and incubated for 24 h. Results were quantified as 0, 1+, 2+, 3+, and 4+ with the degree of pigmentation correlating with the recovery of GBS. ESwab was superior to Amies at all temperatures but was optimal at 21°C and 24°C, whereas recovery in Amies was significantly decreased at these temperatures. Results support the use of CB to facilitate detection of GBS. Furthermore, this demonstrates that ESwab TM is superior to Amies TM for recovery of GBS, particularly when stored at 21°C and 24°C. In light of these findings, the CDC may consider expanding the recommendations to include alternate transport systems in addition to non-nutritive medium.

13. Debunking the Ultimatum Game

Presenter: Hank Xu, Commerce / Economics

This research examines the “ultimatum game” studied in Experimental Economics. The game goes as follows: a proposer has to split \$20 between himself and a responder. After the money is divided, the responder then either accepts or rejects the offer. Accept would result in the money being split according to the proposer’s offer while reject results in \$0 for both players. According to mainstream economics’ assumption of self-interest maximization, the responder would accept any amount of money offered by the proposer because anything is better than \$0. Meanwhile, the proposer, knowing this, would offer the responder the lowest possible amount. However, results from the experiment shows

that most responders rejected low offers and most proposers offer much more than the lowest possible amount. By studying several versions of the ultimatum game and conducting primary research, 5 different variables other than the ratio to which the total sum of money is divided were identified to affect outcome. These are: anonymousness, fear of rejection, perception of the roles, ownership of the money, and total sum of money. Then based on the observations, a graphical model was created that described how the 5 factors affect the game outcome. The implications of this research is that decision making models in economics has to be made more valid by accounting for more qualitative factors such as the ones in this experiment. Only when those factors are accounted for as part of the calculation of utility/satisfaction could the assumption of maximizing self-interest be made.

14. By Students, For Students: Adapting Inquiry-Based Learning for Undergraduate Human Anatomy Education in a Large Class Setting

Presenters: Ralph T.T. Yeung, Wyanne Law, Edwin Ho, Lauren Anstey, Biomedical and Molecular Sciences

Faculty Supporter: Dr. Les MacKenzie

Inquiry-based learning (IBL) is a well-documented educational paradigm that has been adopted for the teaching of various subjects. In the interest of finding novel methods of teaching a traditionally lecture-based subject, IBL was adopted into an undergraduate human anatomy course in 2009 as a project called Inquiry 216. This project allows students to engage in a group-oriented and open-ended research project culminating in a free-format presentation. Since its inception, Inquiry 216 has undergone multiple revisions in methodology, with particular attention paid to formalizing the role of student facilitation, encouraging graduates of Inquiry 216 to become facilitators, and the evaluation and subsequent improvement of IBL in the context of Inquiry 216. A chronological account of conception, issue identification, objective and subjective evaluation and improvement of Inquiry 216 to its present model is illustrated, along with a specific emphasis on the benefits of student-based facilitation. We suggest that successful development, evaluation and improvement of IBL as a parallel to didactic education can further enhance students' potential and enthusiasm for learning across various subjects.

The following posters are a result of research done by the students in Dr. Cynthia Levine-Rasky's Sociology 233: 'Race' and Racialization course. These ten posters were chosen by the entire class to be exhibited at I@Q.

15. African Canadians' Struggle within the Canadian Justice System

Presenter: Ariel Bonneau

16. Discrimination Against Roma People in Canada

Presenters: Alexandra Fraser and Kyle Pakeman

17. Islamophobia in Canada

Presenters: Darcy Vidler and Grace Di Cesare

- 18. Sleeping Car Porters in Canada (1917-1964)**
Presenters: Sonja Moroz and Gillian Craig

- 19. Scientific Racism**
Presenters: Alisha Donovan and Chelsea Wong

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ACKNOWLEDGEMENTS

Inquiry@Queen's acknowledges the Office of the Provost (Academic), the Office of the Vice-Principal (Research) and Queen's Library for its financial support.

