



# Inquiry@Queen's

## 4<sup>th</sup>

### Annual Undergraduate Research Conference

## Program

March 4 & 5, 2010  
Queen's Learning Commons  
Stauffer Library

[iatq.ca](http://iatq.ca)

## TABLE OF CONTENTS

Welcome From the I@Q Steering Committee -----	3
<b>CONFERENCE AGENDA</b>	<b>4</b>
Thursday, March 4, 2010 -----	4
Friday, March 5, 2010 -----	5
<b>ORAL PRESENTATIONS</b>	<b>6</b>
Session I: Social Mediation -----	6
Session II: Gaia I -----	8
Session III A: Constructs of Control I -----	10
Session III B: Constructs of Control II -----	13
Session IV: Conceptualization of Self -----	14
Session V: Selectivity -----	16
Session VI: Educating the Masses: How We Learn, Who Decides -----	18
Session VII: Gaia II -----	20
Session VIII: Social Inequities -----	23
Session IX: Media -----	25
Session X: Conflict and Conspiracy -----	26
Session XI: Art Reflecting Life -----	28
<b>POSTER PRESENTATIONS</b>	<b>31</b>
Session XII: Poster Presentations -----	31
<b>ACKNOWLEDGEMENTS</b> -----	<b>38</b>
<b>I@Q STEERING COMMITTEE</b> -----	<b>38</b>



March 2010

Welcome to the 4<sup>th</sup> Annual Inquiry@Queen's Undergraduate Research Conference where we will celebrate the discoveries of a new generation of scholars. 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; 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!

Congratulations to all participants!

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

Co-Chair, Jackie Druery  
Head, Learning and Research Services  
Stauffer Library

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

## CONFERENCE AGENDA

Thursday, March 4, 2010

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

- 9:30 Coffee
- 10:00 Opening Remarks  
Greetings from the University:  
Dr. Joy Mighty, Director, Centre for Teaching and Learning
- Keynote Address:  
*A Historian Reflects on a Few of His Eureka Moments*  
Dr. Daniel Woolf, Principal and Vice-Chancellor  
Professor, Department of History
- 10:30 Session I: Social Mediation
- 10:30 Session II: Gaia I (Room 121, Stauffer Library)
- 12:15 Conversations about Inquiry and Light Lunch (Speaker's Corner),  
All Welcome!
- 1:15 Session IIIA: Constructs of Control I
- 3:00 Session IIIB: Constructs of Control II
- 1:15 Session IV: Conceptualization of Self (Room 121, Stauffer Library)
- 3:00 Break
- 3:15 Session V: Selectivity (Room 121, Stauffer Library)

**Friday, March 5, 2010**

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

- 9:00 Coffee
- 9:30 Session VI: Educating the Masses: How We Learn, Who Decides
- 9:30 Session VII: Gaia II (Room 121, Stauffer Library)
- 11:30 Session XII: Lunch with Poster Presenters (Room 121, Stauffer Library),  
All Welcome
- 1:00 Session VIII: Social Inequities
- 1:00 Session IX: Media (Room 121, Stauffer Library)
- 2:20 Break
- 2:30 Session X: Conflict and Conspiracy
- 2:30 Session XI: Art Reflecting Life (Room 121, Stauffer Library)
- 3:50 Conference Wrapup (Speaker's Corner), Door Prizes!

## ORAL PRESENTATIONS

### Session I: Social Mediation

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

Thursday, March 4, 10:30-11:50

Moderator: Bob Burge, Registrar, Education

#### **Gretchen Is: On Your Facebook Profile, Analyzing the Sociolinguistics of Your Status Message**

Presenter: Gretchen McCulloch, Linguistics

Faculty Supporter: Lorena Jessop, Linguistics

Some Facebook status messages get dozens of comments and "likes", while others are not interacted with at all. But is this social success just good luck, or are there certain features that can allow us to predict whether a status will be popular or not? This presentation examines a cross-section of authentic Facebook status messages in an attempt to figure out what makes a status socially successful. Three types of status message are identified: the narcissistic status, the informative status, and the shared-reference status. The narcissistic status is the stereotypical expression of emotion or mundane activity, where the audience is less important, and consequently less engaged, than the author. The informative status provides basic information about the user's current location or activity, which can allow him or her to be more easily contacted by friends, but does not tend to inspire much conversation. However, it is the shared-reference status, which refers to an experience that the author shares with a relatively small group of friends, that inspires the greatest levels of dialogue in the form of comments and "likes." Further details to be discussed include the varieties of shared-reference status and the relation of Facebook statuses to external perception of them and to real-life rules of social interaction.

#### **Self-Affirmation and Trust: The Buffering Effects of Work-Related Types of Self-Affirmation on a Trust Violation**

Presenter: Jennifer Daggart, Psychology

Faculty Supporter: Dr. Susan Brodt, Business

Interpersonal trust, or the willingness to be vulnerable to another person based on the belief that she will act benevolently, is an important concept in personal relationships and also in the workplace. Many organizational initiatives such as negotiations and teamwork benefit from trusting behaviours for effective execution. Unfortunately, violations or breaches of trust often occur in relationships with co-workers; when an individual acts in a harmful or self-serving way, co-workers may feel that their self-integrity has been threatened. How can this trust be repaired? According to self-affirmation theory, individuals are motivated to restore their sense of self-worth in the face of a violation. A person can maintain a perception of themselves as moral and adequate by affirming their self-worth in a domain unrelated to that of the trust violation. In this laboratory experiment, three self-affirmation conditions focus on friends/family as the domain outside of the workplace that provides self-affirmation. Participants imagine being part of a Queen's research laboratory highlighting a close relationship to a teammate, who later violates the participant's trust. At that point, either the participant is not affirmed, or they are reminded directly or indirectly of their family/friends. Afterwards, questionnaires assess participants' trusting attitudes and openness to criticism, comparing responses between conditions. This research may help to establish different ways to buffer loss of productivity or effectiveness in the workplace due to loss of trust brought about by events such as downsizing or poor performance evaluations. It also identifies factors that help manage trust violations and restore trust.

## **Marketing to Millennials**

Presenter: Jennifer Turliuk, Commerce

Faculty Supporter: Dr. Ken Wong, Business

Millennials will grow to be 42% of the population within 5 years, and represent one trillion dollars in spending power. There is little information available from millennials themselves and no definitive voice on how they can be reached by marketers. Marketing to Millennials offers insights to marketing professionals about how to market to these 14-29 year-olds most effectively. As a millennial herself, the researcher demystifies which trends relating to consumption habits are actually relevant to millennials and how they can be successfully applied to marketing strategies. Specifically, a combination of internet research, personal experience, observation, and discussions with peers was used to create recommendations. The findings show that trends such as infolust, mobile, cause marketing, frugality and convenience do indeed apply to millennials and can be used to market to this group effectively. Millennials have a need to check and track what is happening in their world. They want to do this on the go, and thus have a desire to always be switched on, and receive information on their hand-held devices. Cause marketing has a striking, widespread impact on them, and can be used effectively to encourage brand-switching behaviour. This age group represents the most frugal consumer segment, yet it is obsessed with convenience. The implication of these trends applying to millennials is the ability to create strong marketing programs that satisfy the needs identified within the trends. Companies are starting to realize that the best way to find out how to market to millennials is to ask one.

## **Attending to Bullying: A Psychophysical Approach to Understanding Peer Aggression and Victimization**

Presenter: Chelsea Heaven, Psychology

Faculty Supporters: Dr. Wendy Craig, Psychology; Dr. Monica Castelhana, Psychology

Intervention and prevention programs for peer aggression in schools have largely been constructed with the assumption that aggressive children will pay more attention to aggressive stimuli in their social environment. However, this hypothesis has never been tested with direct measures of attention. Thus, my honours thesis project is investigating how participants with a history of peer aggression involvement as a perpetrator or victim direct their attention in photographs depicting scenarios of peer aggression. Based on answers in a questionnaire, participants were divided into three groups: (1) those with a history of perpetrating peer aggression, (2) those with a history of being victimized by peer aggression and (3) those with no history of peer aggression involvement. The experimental study was conducted on an eyetracker, which measured where participants were looking as they viewed 48 photographs. The photographs depicted preadolescent children in scenes of group or peer-to-peer interactions that were either aggressive or non-aggressive. I predict that those with a history of aggression will pay more attention to the aggressors in the scenes more often than those with a history of victimization or the control group. This investigation will give direct evidence regarding how attention in social scenes is affected by a history of peer aggression involvement. A better understanding of how attentional processes are affected by a history of peer aggression involvement will allow for the development of more effective intervention and prevention programs for peer aggression in schools.

## Session II: Gaia I

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

Thursday, March 4, 10:30-12:30

Moderator: Dr. Neal Scott, Geography

### **The Green Energy Act: Will Ontario Become the Next Germany?**

Presenter: Melissa Ha, Commerce

Faculty Supporter: Steven Moore, Business

Climate change and the depletion of fossil fuel are no longer a growing concern, but the most time-sensitive issues facing the society. In response to this, Ontario passed the Green Energy Act (GEA) into law in 2009 and introduced a number of initiatives to promote the "green economy" in the province, making it the first North American jurisdiction with an incentive system modelled after Germany's feed-in tariffs (FITs). Many believe that the GEA will improve the business conditions for clean technology endeavours in Ontario; nonetheless, others doubt that people will be susceptible to the higher energy price and claim that now is not the right time. This paper aims to critically assess the viability of the market development for renewable energy as proposed by the GEA. Considering that it is relatively early to make any conclusion, the first part of this paper provides a brief summary of what the GEA entails and compares it with the case of another jurisdiction after which the GEA was modelled – namely, Germany. In the second part, this paper closely examines the effects that the GEA has had on businesses in Ontario. More specifically, analysis of ongoing "green energy" projects is provided based on interviews with industry professionals in both the public and the private sectors in the province.

### **Variable Efficacy of the Purple Loosestrife (*Lythrum salicaria*) Biological Control Program in Ontario: Recommendations for Future Monitoring**

Presenter: Angela Boag, Biology

Faculty Supporter: Dr. Chris Eckert, Biology

Invasive species represent a major threat to global biodiversity and have multi-million dollar impacts on agricultural productivity as well as the functioning of natural ecosystems. Biological control, the introduction of the natural enemies of invading species, is a potentially cost-effective and powerful management tool for controlling the spread and impact of exotic organisms. However, the monitoring component of biocontrol initiatives is rarely adequate to determine their success, impeding the improvement of biocontrol techniques. In order to determine the efficacy of the biocontrol beetles introduced to control purple loosestrife (*Lythrum salicaria*), an invasive wetland plant in Ontario, 52 *L. salicaria* populations were surveyed in eastern and central Ontario in August and September 2009. Three population types were surveyed, those in which the release of *Galerucella* species biocontrol beetles had anecdotally been effective, anecdotally ineffective, and those in which beetles had never been purposefully released. The level of herbivory damage inflicted by the biocontrol beetles was recorded, as well as plant height, flower number, and measures of stand density. It was determined that the biocontrol beetles have spread throughout Ontario, and are inflicting a moderate level of damage on purple loosestrife populations. However, significant variation exists among populations in these measures, and levels of damage were not significantly different between the three site types. This indicates that a variety of ecological factors influence the efficacy of biocontrol, and it is recommended that the purple loosestrife biocontrol program be more intensively monitored in future so that it may inform subsequent initiatives in Canada.



## **Marine Debris: Sources, Impacts and Reduction Programs**

Presenter: Peter Bishop, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne, Civil Engineering, Chemical Engineering

Marine debris is a major problem worldwide with ecological, economic, and human health impacts. Plastics, glass, metal, Styrofoam, rubber, and old fishing gear form the majority of the debris. The pollution comes largely from land sources, although a portion of it is released by vessels. The litter affects wildlife, habitats, fisheries, and vessels that travel through the polluted areas. Recently, the severity of the problem is being recognized, and governments are acting. Monitoring programs have been established to examine the extent of the problem, and management plans have been introduced to clean up affected areas and to reduce the sources of the debris. Governments face technical, political, and financial barriers when tackling this issue. This report reviews the sources and impacts of the marine litter, and examines the methods adopted by various countries and regions to tackle the problem.

## **“Dry Fog”: The Dust Veil Event of 535-536 AD**

Presenter: Kelsey Koon, Classics

Faculty Supporter: Dr. George Bevan, Classics

What were the effects of a single dramatic climate event on the social and political stability of the time? This presentation examines one example of dramatic climate change, and the social and political results of that specific climatological event. Sixth century sources from the Mediterranean, Northern Europe, and China all refer to an atmospheric event that they call a “dry fog”, or a “dust veil”, that occurred around the years 535-536 AD. Geological evidence present in ice cores and tree ring studies confirm the occurrence of this event. It is evident from the written sources that the dust veil had a significant effect on the ancient world. While the exact causes of the event are debated, the fact remains that it appears to have initiated a period of dramatic cooling, leading to crop failures, famines and unseasonably cold weather over much of the northern hemisphere, with corresponding political and social consequences. The isolated nature of this event, as opposed to normal, gradual fluctuations in temperature, offers a unique opportunity to examine its immediate and long-term consequences in depth. This presentation will take a multidisciplinary perspective of this singular climatological event, examining not only the scientific evidence, but also the historical context of the 535 AD dust veil, and its perception in modern scholarship.

## **The Effects of Long-Term Land-Use Change on Soil Properties in Perth, Ontario Canada**

Presenter: Trina Stephens, Biology, Geography

Faculty Supporter: Dr. Neal Scott, Geography

Land-use change can have a major impact on soil properties, leading to long-term changes in soil nutrient cycling rates and carbon storage. While a substantial amount of research has been conducted on land-use change in tropical regions, empirical evidence of long-term conversion of forested land to agricultural land in North America is lacking. Pervasive deforestation for the sake of agriculture throughout much of North America is likely to have modified soil properties, with implications for the global climate. Here, we examined the response of physical, chemical and biological soil properties to conversion of forest to agricultural land (100 years ago) on Roebuck Farm near Perth, Ontario, Canada. Soil samples were collected at three sites from under forest and agricultural vegetative cover on both high- and low-lying topographic positions (12 locations in total; soil profile sampled to a depth of 40cm). Our results revealed that bulk density, pH, and nitrate concentrations were all higher in soils collected from cultivate sites. In contrast, samples from forested sites exhibited greater water-holding capacity, porosity, organic matter content, ammonia concentrations and cation exchange capacity. Many of these

characteristics are linked to greater organic matter abundance and diversity in soils under forest vegetation as compared with agricultural soils. Microbial activity and  $Q_{10}$  values were also higher in the forest soils. While soil properties in the forest were fairly similar across topographic gradients, low-lying positions under agricultural regions had higher bulk density and organic matter content than upslope positions, suggesting significant movement of material along topographic gradients. Differences in soil properties are attributed largely to increased compaction and loss of organic matter inputs in the agricultural system. Our results suggest that the conversion of forested land cover to agriculture land cover reduces soil quality and carbon storage, alters long-term site productivity, and contributes to increased atmospheric carbon dioxide concentrations.

### **Affects of Active Layer Detachments on Soil Gas Exchange Rates in the High Arctic**

Presenter: Allison Neil, Geography

Faculty Supporter: Dr. Neal Scott, Geography

With changes in climate, the high Arctic region will likely experience greater changes in temperature compared to other regions. It is also likely that soils will be wetter due to permafrost thawing and increased precipitation. These changes in soil moisture have already led to the occurrence of active layer detachments. At Cape Bounty on Melville Island, these active layer detachments have disturbed significant proportions of whole watersheds. The impact of these disturbances on whole-watershed nutrient budgets is poorly understood. This project examines soil gas exchange ( $CO_2$ ,  $N_2O$ ,  $CH_4$ ) in three active layer detachments. At each site, soil gas exchange rates were measured across a disturbance gradient. In addition, other measurements such as soil moisture, temperature, and nutrient availability were made to help understand the processes regulating trace gas production. This research will help understand the connections between active layer detachments and watershed-scale nutrient losses due to changes in climate.

### **Session III A: Constructs of Control I**

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

**Thursday, March 4, 1:15-2:55**

**Moderator:** Dr. Jenn Stephenson, Drama

### **Transgressing Time, Place, Gender, and the Material: The Political Strategies of Louise Erdrich, Tomson Highway, and Daniel David Moses**

Presenter: Laura Schaeffli, Geography

Faculty Supporter: Dr. Anne Godlewska, Geography

The colonization of Aboriginal peoples in North America involved systematic efforts to control and eradicate Indigenous knowledges and cultures. However, Aboriginal peoples have resisted colonization through creative expression; creating space for the exploration and critique of the myriad identities informed by this relationship. This study focuses on work by prominent American and Canadian authors Louise Erdrich, Tomson Highway, and Daniel David Moses. Erdrich, who self-identifies as Chippewa with mixed European ancestry, is best known for the interconnections of short narratives between and within her novels. Tomson Highway, a Cree novelist and playwright, is most famous for his cycles of "rez" plays detailing life on a fictional Ontario reserve. Daniel David Moses, member of the Delaware First Nation in Brantford, Ontario and acclaimed Canadian playwright, is best known for his parody of non-Aboriginal constructions of the "authentic Indian" in his work. These authors use political destruction of normative categories, particularly gender transgression, but also past and present, here and there, material reality and the spirit realm to create space for the playful exploration of Indigenous identities. I explore the ways in which gender transgression is nested in larger themes of playful category destruction and creative

reconstruction to open up issues of political importance to these authors. By exploring these themes in conjunction with author biographies and interviews, I identify the political motives and implications of category transgression.

## **The Rule of Law: The Role of Judicial Review in Promoting Human Rights and Social Reform**

Presenter: Lauren Sampson, History and Politics

The purpose of this paper is to investigate the expanded scope of judicial review after the introduction of the Canadian Charter of Rights and Freedoms in 1982 and the subsequent power of courts to strike down legislation that violates constitutional rights. Subsequent interpretations of the Charter have transformed such rights into litigation tools and sources of empowerment capable of mobilizing forces for social change. Through an analysis of major cases and rulings, the paper will argue that the adoption of the Charter and the constraints existent upon popularly controlled institutions have established judicial systems as the primary guarantors of citizen and minority rights and the active instigators of social reform in Canadian civil society. Each of the chosen cases bears monumental political and legal significance. *R. v. Oakes* created a proportionality test used to assess and potentially remove state legislation infringing on Charter-protected liberties; *R. v. Morgentaler* decriminalized abortion and represented a definitive judicial foray into a contentious ethical and political debate; *Vriend v. Alberta* removed the last bastion of sanctioned discrimination against homosexuals, providing a foundation for *The Same Sex Marriage Reference* and finally *Halpern v. Canada* rendered Ontario the first jurisdiction in North America to recognize same-sex marriage. The paper will also address the limited capacities of legislative bodies to meet demands for reform, leaving them to assume chiefly reactive roles. Finally, it will examine and evaluate criticism levied at the judicial review process, with particular attention paid to accusations of anti-majority and undemocratic tendencies.

## **Inglorious Judgment**

Presenter: Tamara Nadolny, German, Film and Media Studies

Faculty Supporter: Dr. Jill Scott, German

It almost sounds like the beginning of a joke, to ask what Stanley Kramer's 1961 film *Judgment at Nuremberg* and Quentin Tarantino's 2009 *Inglourious Basterds* have in common. One film is a lengthy black and white, Oscar-winning courtroom drama, the other a recently released, blood-soaked World War II fantasy. Yet in an essay for a Law and Literature seminar with Dr. Scott last semester, I sought to explore the similarities between these two films in light of their approaches to themes of justice and legality. Despite initial appearances the two films are remarkably alike. Both Kramer and Tarantino use casting in noteworthy ways - choosing their actors not only for their considerable talents but also their cultural cache. *Judgment* and *Basterds* also use the framework of Germany and the war to comment not only on the past, but also on the present; Kramer makes an interesting commentary on the dangers of McCarthyism, and Tarantino carefully allies his audience with a character whose actions clearly can be seen as terrorism. Kramer and Tarantino further highlight their views on justice by using language in interesting, and revealing ways. By looking at a film from the past, as well as the present, this essay examines the ways in which filmmakers combine historical events with aspects of the present to raise questions about important current issues; specifically, imposed justice and legality within the context of both the Cold War and the War on Terror.

## **Traditional Medicine vs. the Chinese Government**

Presenter: Rozena Crossman, Religious Studies

Faculty Supporter: Dr. James Miller, Religious Studies

This presentation investigates China's policy towards traditional Chinese healing practices. The Chinese government's policies are highly influenced by "Western" philosophy and ideals that are not always compatible with older aspects of Chinese culture, such as healing practices. (The term "Western" is put in quotations because while it refers to a euro-centric culture, the idea of "west" varies depending upon one's position on the globe.) China's attitude towards traditional healing is indicative of a greater problem faced by most of today's nations: in a world dominated by "Western" language and philosophy, holistic principles and practices tend to not only be misunderstood but completely shunted aside. By examining modern Chinese attitudes toward non-scientific healing, this project intends to expose the flaws in the underlying logic of modern biomedicine—flaws common to both China and the West. The research is divided into five main categories: the origin and nature of traditional healing and healing cults; traditional healing as a religion; traditional healing as a science; "Western" influence on Chinese government; and, government definition and designation of superstition and cults. These five topics combined create a comprehensive understanding of traditional healing practices as well an understanding of their current political state. Within these categories, problems surrounding freedom of belief will naturally arise. Accompanying these problems will be the issues concerning legitimacy of traditional healing, and how "legitimacy" itself is defined—and who defines it.

## **Multiculturalism in Canada: Individual vs. Collective Rights**

Presenter: Meaghan Dalby, History, Global Development Studies

Faculty Supporter: Dr. Dia Da Costa, Global Development Studies

This essay will look at the controversial topic of multiculturalism in Canada. It will explore aspects of individual rights compared with group rights. This is a very important topic to Canadians, as they claim to live in a multicultural nation where many different groups co-exist. In order to answer the many questions which arise with this topic, it is first necessary to define multiculturalism as it has developed throughout the nation. With this background in mind, it will be easier to understand where individual rights stemmed from. Did they evolve on their own, or do they stem from group rights and traditions which were already in existence? Does this make a difference when we compare the two? As multiculturalism becomes more prominent in Canadian culture, and the rights of the group come to the forefront, where do individual rights stand? Immigrants coming to Canada can expect that their cultural differences will be tolerated and respected, yet problems can arise if individual rights are infringed upon. This essay will specifically look at the case study of Sharia Law infringing on women's rights in Ontario, and Ernst Zundel who spread hate crimes against the Jews under the pretext of the individual right to free speech. Through these case studies, it will be determined whether Canadians prefer to have their individual rights protected, or respect their cultural and groups rights above all else. The conclusion will express how Canadians feel about the difference between group and individual rights.

## Session III B: Constructs of Control II

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

Thursday, March 4, 3:00-4:20

Moderator: Dr. Doug Babington, Director, Writing Centre

### Religion and Ecstasy in Seventeenth Century Italy

Presenter: Emilija Babich, Art History

Faculty Supporter: Dr. Jane Russell Corbett, Art History

In the seventeenth century, the supremacy of the Catholic Church was being threatened both by science and by the growth of Protestantism. Rome, as the only remaining centre for Catholicism, needed to reassert its authority and reclaim those who had lost their faith. As a result, religious artistic production of the seventeenth century took on a spectacular and theatrical character that sought to inspire awe and reverence in its audience. There was a renewed interest in depicting martyred saints, encouraging the laity to look upon them as models of Catholic piety who were willing to give their lives for the faith. However, there was also a growing cult of interest in the mystical aspects of Catholicism. Figures such as Saint Teresa of Avila, who experienced visions and ecstatic unions with Christ, encouraged a renewed interest in Catholicism and promoted a much more personal and private connection with Christ. This presentation will investigate the growing interest in and conceptions of martyrdom and religious ecstasy. In particular, it will examine Gianlorenzo Bernini's sculptures of *St. Lawrence*, *The Ecstasy of Saint Teresa*, and the *Blessed Ludovica Albertoni*, ultimately demonstrating that the two concepts were intimately related and, when depicted with the magnificence and splendour of the Baroque style, were powerful tools of propaganda for the Catholic Church.

### The Contemporary Religious Marketplace in China and the Role of Rational Choice Theory

Presenter: Raissa Killoran, Religious Studies

Faculty Supporter: Dr. James Miller, Religious Studies

In spite of the state-sanctioned restrictions on religion following the Cultural Revolution and the relaxed, albeit still limiting, policy in 1979, religion has continued to persist in Chinese culture through inventive practices. Religious adherents partake in a unique religious marketplace, in which choice is curtailed by political bans. However, religiosity has maneuvered through such sanctions, producing an unusual market and suggesting an inherent sociological drive towards forming religious community. Rational choice theory suggests a theory of religious economy in which a supply and demand model determines the success or failure of particular religious traditions. Through access to a religious marketplace in a religiously pluralistic society, religious 'consumers' may select religions which fulfill their expectations and spiritual needs. While the model of the religious marketplace is credible in regards to the North American religious situation, rational choice theory in contemporary China requires a more complex model. Due to historical restrictions on Chinese religious practice, a religious market was rendered temporarily invisible, thus creating innovative religious choices and options for Chinese communities. This has resulted in a 'tripartite religious market', as described in the work of Fenggang Yang. Through Yang's work, we can understand China as maintaining a religious marketplace which looks dissimilar to that of North America. By viewing the Chinese market through the lens of rational choice theory, it is clear that religion and religious choice has thrived in China in a new sociological mechanism.

## **Corporate Social Responsibility - Is it a Viable Tool for Development?**

Presenter: Robert Nartowski, Global Development Studies

The topic of *CSR*, or Corporate Social Responsibility, continues to grow in today's political, economical, and social spheres. Despite the fact that *CSR* is an immense driver for development projects around the world, there is little academic work that evaluates the effects of *CSR* and makes a judgment on this issue. Firstly, this study will define and organize the broad term of *CSR* as its meanings range from natural preservation projects to human resource benefits. Through the organization of the term *CSR* into various categories, one can better understand the complexities and ethical issues surrounding this avenue of funding. Secondly, this study will evaluate the effects of major *CSR* projects around the world. By examining the political, economical, and social advantages and disadvantages of some of the world's largest *CSR* funded projects, a verdict will be made on this issue.

## **Understanding the International Trade in Waste: Who Bears Responsibility?**

Presenter: Lindsay Wiginton, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne, Civil Engineering, Chemical Engineering

There has been a growing dialogue surrounding the globalization of commodity supply chains in recent years. Several important issues have surfaced surrounding working conditions in the countries of production and the environmental impact of massive transportation required to feed the global trade. However, commodities rarely end their international journeys at the end-of-use phase. In fact, the last half-century has seen the birth of a complex international trade in waste. End-of-use products are shipped worldwide for one of three main reasons: for disposal, for recycling or for second-hand use. The most commonly traded waste items are of an electronic nature; as a result, they have the potential to release toxins in the form of heavy metals and other contaminants. The primary factors driving this trade are different environmental policies and/or different labour capabilities between the trading regions. As a result, the flow of waste most often occurs from developed to developing countries, having adverse environmental and social effects despite the short-term economic gain. This inquiry conducts a survey of the current international trade in waste, identifying the most common trade routes and goods. Specifically, it examines domestic and international policies, such as the Basel Convention (1992), which seek to moderate or end the international trade in waste. Finally, this inquiry will illustrate the complexity of the waste trade system and question where the responsibility lies to moderate this flow: with the material producers, the consumers, or the governing bodies.

### **Session IV: Conceptualization of Self**

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

**Thursday, March 4, 1:15-2:55**

**Moderator:** Dr. Jill Atkinson, Psychology

### **The Effect of Conceptual Representations on Attentional Bias**

Presenter: Nietzsche Lam, Psychology

Faculty Supporter: Dr. Monica Castelhana, Psychology

Many cultures have long been instilled with positive and negative concepts, which are associated with spatial metaphors, for instance, "I am feeling down" implies that I feel upset. Recent research (Chasteen, Burdzy & Pratt, 2009; Meier & Robinson, 2005) has suggested that some concepts are strongly ingrained such that they influence how we attend to the environment. In particular, certain positive concepts such as 'almighty' and 'happiness' bias attention upward and to the right, respectively and negative words 'lucifer' and 'mournful' to the downward and to the left, respectively. Using a larger variety of positive

and negative concepts than in previous studies, the current study seeks to determine whether concepts derived from pictures as well as words will produce a shift in attention. We present participants with words or pictures depicting either positive (e.g., smiling baby) or negative concepts (e.g., drug addict). We expect that a target displayed at the top or right-side of the screen will be detected more quickly for positive concepts and targets displayed at the bottom or left-side of the screen will be faster for negative. However, whether the response times to targets in the valid conditions will be quicker for words than pictures is unknown. Words could be faster than pictures because previous research has demonstrated that pictures can access concepts in our minds directly, whereas words access indirectly. On the other hand, another theory suggests that both words and pictures access concepts directly; therefore, there may be no difference between pictures and words.

### **Naming and Indication in *The One Secret That Has Carried***

Presenter: Ryan McQuaid, Gender Studies

This essay explores the ways in which Foucauldian indication and naming operate as mediums through which truth, sex, and subjectivities communicate in the poem *The One Secret That Has Carried* by Jason Shinder. The essay examines the position of sexual acts in the poem, and determines that they function as sites of indication from which truth can be procured. These sites of indication operate as privileged spaces of truth within the poem which imply a compulsory body project for the subject reading them. Self-naming is also explored. The ways that the narrating subject names himself and other spaces/subjects in the poem is examined to elucidate how a healthy/sick binary is generated and how this binary is implemented and enforced in discourse. A theme discussed in connection with these investigations is the pathologizing of the narrating subject of the poem. This discussion centres around what structures inform the subjects reading of himself as pathologized. As well as how the subject's self-naming operates to effect and consolidate the pathology to which he is predicated.

### **Music Education and Public Policy: How it Affects Children in Ontario Schools**

Presenter: Xiao (Trevor) Lin, Economics, Music

The purpose of this paper is to analyze the state of music education in Ontario public schools, with a focus on elementary schools. I will examine the condition of music education in provinces such as Nova Scotia to see if any differences exist in the priority given to music in other Canadian provinces. Initially, I will provide arguments for why music education in our schools is necessary. I will then go on to argue that policy, funding allocation and financial constraints are the driving forces behind a deteriorating state of music education in Ontario. Finally, I will provide specific recommendations to improve the state of music education in Ontario.

### **The e-Narrated Self**

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

Faculty Supporter: Dr. Paul Fairfield, Philosophy

A common question asked about the Web 2.0 by the offline population is: "What do people do there?" The paper addresses this question with respect to Paul Ricoeur's narrative theory of the self. According to his essay *Life in Quest of Narrative*, a person drifts through time experiencing events happening to them, but none of it is *actually* lived when it is not "recounted" or "storied". In this light, "storytelling may be said to *humanise* time by transforming it from an impersonal passing of fragmented moments into a patten, a plot, a *mythos*". Blogs and sites like Facebook represent the most recent development in the human attempt to weave this "*mythos*". A profile page and a tweet are first and foremost stories that appear to its critics "truncated or parodied" by design "to the point of being called micro-narratives or post-narratives", and to its advocates "multi-plotted, multi-vocal and multi-media". The paper introduces

notions of e-Self and e-Narrative, examines their dangers and benefits, and concludes that “the advent of cyber-culture should be seen not as a threat to storytelling but as a catalyst for new possibilities of interactive, non-linear narration”.

### **Female Sexual Arousal and Sociosexuality**

Presenter: Amanda Timmers, Psychology

Faculty Supporter: Dr. Meredith Chivers, Psychology

This study investigates the relationship between sociosexuality (one’s willingness to engage in uncommitted sexual activity) and women’s patterns of sexual arousal. Assessments are being made of approximately twenty women’s subjective and genital arousal to 18 audio clips depicting sexual or neutral encounters with strangers, friends, and long-term relationship partners. Participants are expected to show the highest genital and subjective arousal to the scenarios demonstrating the level of commitment that corresponds with their sociosexual orientation. Sociosexuality is being assessed using Jackson & Kirkpatrick’s (2007) multidimensional measure of sociosexuality and Penke & Asendorpf’s (2008) Revised Sociosexual Orientation Inventory (SOI-R). This study will have important implications for our understanding of women’s sexual arousal.

### **Session V: Selectivity**

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

**Thursday, March 4, 3:15-4:15**

**Moderator:** Dr. Brian Frank, Electrical and Computer Engineering

### **The Synthesis of Pharmaceuticals: The Effective Application of Secondary Boronic Esters in Enantioselective Suzuki-Miyaura Cross-Coupling Reactions**

Presenter: Jonathon Moir, Chemistry

Faculty Supporter: Dr. Cathleen Crudden, Chemistry

Pharmaceuticals and drugs have become an indispensable part of human life. Presently, a myriad of different drugs are available for a variety of mental and physical health concerns. The synthesis of these drugs, however, remains an elusive and often difficult aspect of the industry. The importance of chirality, or “handedness”, in the synthesis of natural products is paramount, as any given pair of enantiomers can have widely differing physiological effects. As such, the ability to control the enantioselectivity of a reaction is of the utmost importance. One example of a facile method used to form carbon-carbon bonds is the Suzuki-Miyaura cross-coupling reaction. Not only is this reaction effective at coupling primary organoboronic esters with organohalides, but recent work in the Crudden group in the Department of Chemistry has revealed an effective method of also cross-coupling chiral secondary organoboronic esters with good retention of stereochemistry. This work, the first of its kind, is crucial in developing single-handed natural products for a wide array of applications, including applications in the pharmaceutical industry. The end result is safer and more effective drugs for distribution to the general public. To expand the scope of this project, new substrates are currently being synthesized for cross-coupling applications. The overall goal is to improve upon current methodologies, while helping to meet the industrial and academic needs of the future.



## **Species Size and Reproductive Economy in Herbaceous Vegetation**

Presenter: Amanda Tracey, Biology

Faculty Supporter: Dr. Lonnie Aarssen, Biology

According to traditional theory, larger plants generally have an advantage with respect to competition, especially for light. It seems a paradox then that most species that coexist within natural vegetation are relatively small; species size distributions are right-skewed at virtually every scale. The critical question then becomes: if bigger is better in competition for resources, why then are there so many small plants? A potential explanation for this paradox is that smaller species may have greater reproductive economy – i.e. the ability to reproduce despite suppression from intense competition. Selection for greater reproductive economy may be associated with smaller seed sizes, increased rates of self-fertilization and/or clonality, and in the case of this study, smaller size at reproductive maturity. Random plots in an old field at Queen's University Biological Station were sampled and the largest and smallest reproductive individuals of each species were collected, dried and weighed – to test the hypothesis that smaller species can reproduce at a smaller proportion of their maximum potential plant sizes. The results did not support this, but the hypothesis that smaller plants have greater reproductive economy could not be rejected as it was not possible to record data for the largest possible plant size for each species (since even the largest plants were subjected to competition from neighbours). This provides a focus for future research. Understanding the role of plant size in affecting the process of species assembly has important implications for species coexistence and mechanisms of biodiversity preservation, and thus efforts involving conservation and ecosystem management.

## **Aminergic Regulation of Anoxic Coma in *Locusta migratoria***

Presenter: Tina Hu, Biology

Faculty Supporter: Dr. Meldrum Robertson, Biology

Cortical spreading depression (CSD), a phenomenon underlying stroke and head trauma, involves the depolarization of neurons in one localized area that rapidly propagates to and depolarizes surrounding cells. CSD is characterized by a sudden increased concentration of extracellular potassium ions ( $K^+$ ), which is also generated by cellular stressors like anoxia. The purpose of this study is to examine the role of biogenic amines in the time to succumb and time to recover from anoxic coma in *Locusta migratoria*, a locust which is regularly exposed to anoxia in its natural environment and survive by entering a reversible coma (a spreading-depression like event). Locusts were first immersed in water for 30 minutes and the time to succumb, ventilate, and stand upright were measured. There were 5 treatment groups with each one paired to a control group using saline injections: 1) octopamine (OA) and its antagonist epinastine (EP), 2) dopamine (DA) and its antagonist haloperidol, 3) serotonin (5-HT) and its antagonist mianserin, 4) tyramine (TA) and its antagonist yohimbine, and 5) histamine (HA) and its antagonist pyrilamine maleate salt. Results indicated that EP-injected locusts took significantly longer to succumb, ventilate, and stand upright compared to controls. Mianserin-injected locusts also took significantly longer to succumb, ventilate, and stand upright.

## **Session VI: Educating the Masses: How We Learn, Who Decides**

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

**Friday, March 5, 9:30-11:50**

**Moderator:** Dr. Gwynn Dujardin, English

### **Public Stewards or Hired Guns?: An Inquiry into Engineering Education**

**Presenters:** Lindsay Wiginton, Civil Engineering; Amy Buitenhuis, Mathematics and Engineering

The world is facing converging crises of overpopulation and urbanization, resource depletion and global warming, political tension and unrest. Often, we call upon engineers, as technical experts, to address these issues. Engineers are allotted a large amount of decision-making influence and power based on their assumed knowledge and skill sets. However, there is perhaps a danger in giving influence to individuals with a limited understanding of social, political and environmental issues. In the words of Donna Riley, "The profession of engineering...has historically served the status quo, feeding an ever-expanding materialistic and militaristic culture, remaining relatively unresponsive to public concerns, and without significant pressure for change from within" (Riley, 2008). This inquiry seeks to ask: "Are engineers truly prepared to tackle today's contemporary issues?" by exploring the nature of the engineering industry in the 21<sup>st</sup> century, engineering education broadly, and the Applied Science Curriculum at Queen's University specifically. It will draw on both independent research and focus groups with Applied Science students. Particular themes which will be explored include the engineering design process, the understanding of power relationships and the need for interdisciplinarity.

### **One Touse, Two Tice, Three...What? How Children Learn Irregular Plurals Using Conventionality**

**Presenter:** Gretchen McCulloch, Linguistics

**Faculty Supporter:** Dr. Mark Sabbagh, Psychology

Most of the time, the rules that change a word's meaning are fairly constant (e.g., add -s to make a noun plural); however, they do not always apply. But how do young word learners even consider the possibility that "feet" is the plural of "foot," when the word "foots" should do equally well? This study suggests that children may learn an irregular novel plural form of a noun better from the person who created an object, than from someone who only found it. To do this, we played a naming game with 3 and 4 year old children, where we taught them regular and irregular plurals for unfamiliar objects, and evaluated whether the group of children who were told that the experimenter had made the objects learned the plurals more than those who were told that the experimenter had found them. Although hampered by a small sample, preliminary results showed that 4-year-olds learned irregulars slightly more often in the made condition than the found condition. The younger group did not produce irregulars as readily, and was not affected by whether the novel toy was made or found.

### **Coming to Understand the Social and Physical Worlds**

**Presenter:** Sydney Hopkins, Psychology

**Faculty Supporter:** Dr. Mark Sabbagh, Psychology

Children's conceptual development has been described as a process of "theory change." Specifically, children begin with an idea and then iteratively update that idea by combining existing and new information, making and testing predictions and then revising their idea based on new data again. Similar processes have been postulated to account for adaptive phenomenon in perceptual psychology and motor control. The similarities between the two processes suggest that performance on tasks that

measure conceptual and sensory-motor “theory change” respectively may be related. The goal of the present study is to determine whether children’s development in a complex conceptual domain, theory of mind, is associated with children’s performance in a load force adaptation paradigm. Theory of mind is broadly defined as the ability to understand how mental states, such as beliefs and desires, motivate our own and other people’s actions. In contrast, load force adaptation is the ability to gradually adjust the amount of force exerted on an object in order to smoothly lift it up, as experience with the weight of the object is gained. To explore the mechanisms underlying these two processes, children between the ages of 3.5 and 4.5 years participate in a load force adaptation task and a battery of theory of mind tasks. We predict that since the underlying processes appear to be theoretically similar, the individual differences in the ability to adapt load force and in theory of mind ability will be positively correlated.

### **Shining a Spotlight on Interprofessional Education & Evaluating an Interprofessional Pediatrics Educational Module Using Simulation**

Presenter: Ana Krause, Nursing  
Faculty Supporter: Cheryl Pulling, Nursing  
Co-Authors: Marian Luctkar-Flude, Dr. Cynthia Baker, Dr. Jennifer Medves, Dr. Ellen Tsai, Lauren Phalen, & Marie-Claude Goyer

Interprofessional Education (IPE) occurs when two or more professions learn from, with, and about one another. There is a growing body of research indicating that IPE leads to enhanced professional practice, improved knowledge and skills, more enjoyable learning experiences, and can result in long term cost control from overall improvements in patient safety. Simulation learning, or the reenactment of routine or critical clinical events is now being incorporated into many IPE programs. Program participants work together to perform emergent care skills and scenarios in a controlled environment on high-fidelity human patient simulators. Interprofessional collaboration and simulation is essential in pediatric care as it contributes to overall patient wellbeing and offers an opportunity to practice the skills used in an acute care incident, events that occur at low frequency in childhood. A research study through the Faculty of Health Sciences, evaluates the introduction of an interprofessional pediatrics educational module amongst nursing and medical students at Queen’s University. This study is part of an innovative pilot project aimed at improving patient welfare and safety through interprofessional health education using patient simulators.

### **Differential Impairments in Incentive Learning Caused by First- and Second-Generation Antipsychotic Drugs**

Presenter: Matthew Florczynski, Psychology, Biology  
Faculty Supporter: Dr. Richard Beninger, Psychology

Schizophrenia is a neuropsychiatric disorder characterized by increased function of dopamine in the brain. Dopamine release is a natural response to reward. It promotes incentive learning (IL), a process by which neutral stimuli acquire the ability to elicit approach and other responses. A recent model characterizes dopamine-mediated IL as a progressive process with early and late stages accompanied by a shift in neural control from the nucleus accumbens (NAc) to the dorsolateral striatum (DLS). A parallel can be drawn to differences in regionally specific neural responses generated by first- and second-generation antipsychotic drugs (APDs) used to treat schizophrenia. APDs are dopamine receptor antagonists, but first-generation APDs affect the NAc and DLS while second-generation APDs affect primarily the NAc. We compared the effects of APDs on IL. Rats ( $N = 48$ ) were trained to press a lever for food pellets in an operant chamber. Intraperitoneal injections (1 hr before testing) of the first-generation APD haloperidol (0,0.05,0.10,0.20 mg/kg) or of the second-generation APD risperidone (0,0.20,0.40,0.80 mg/kg) induced dose-dependent suppression of lever pressing on days 1-4, with the highest dose groups failing to demonstrate any evidence of previous learning on day 5 when tested drug-free. On days 16-20,

haloperidol induced a day-to-day suppression not seen with risperidone. The results suggest that the effects of first- and second-generation APDs on learning processes putatively mediated by the NAc and DLS can be differentiated experimentally. The findings imply that APDs may differentially affect IL in patients with schizophrenia.

### **Neural Correlates of Mental State Decoding in Dysphoria: An Event-Related Potential Study**

Presenter: Angelita Wong, Psychology

Faculty Supporters: Dr. Kate Harkness, Psychology; Dr. Mark Sabbagh, Psychology

Depression is often associated with profound social and interpersonal functioning impairments. Negative interpersonal experiences may lead depressed individuals to withdraw from social interaction, which may in turn exacerbate the depression state (Rippere, 1980). As a result, it is of theoretical and clinical importance to understand the mechanisms underlying these social deficits. Researchers have applied the theory-of-mind framework to better understand the impaired social functioning in depressed individuals. Theory of mind refers to the everyday ability to attribute mental states (i.e., beliefs, desires, emotions) to others to both understand and predict their behaviour (Wellman, 1990). Research has found that individuals with dysphoria (i.e. elevated scores on a measure of depression symptoms, but not necessarily a diagnosis of clinical depression) demonstrate enhanced mental state judgments (Harkness, Sabbagh, Jacobson, Chowdrey, & Chen, 2005). This study will determine neural mechanisms that may underlie this phenomenon by examining whether differences in brain activity exist between dysphoric and nondysphoric groups during mental states decoding. I will record electrophysiological data while participants are judging the mental states from pictures of eyes. Based on previous research (Sabbagh, Moulson, & Harkness, 2004), I anticipate that mental state decoding will be associated with the right inferior frontal and right anterior temporal regions of the brain. Furthermore, I hypothesize that dysphoric individuals will have greater activations in these brain regions and make significantly more accurate judgments than nondysphoric individuals when making mental state judgments.

### **Title TBA**

Presenter: Susannah Gouinlock, Academic Affairs Commission, AMS

### **Session VII: Gaia II**

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

**Friday, March 5, 9:30-11:30**

**Moderator:** Dr. Robin Dawes, School of Computing

### **In-Situ Treatment of Landfill Leachate with Permeable Reactive Barriers**

Presenter: Robert Boyes, Civil Engineering

Faculty Supporter: Dr. Pascale Champagne, Civil Engineering, Chemical Engineering

As precipitation percolates through a landfill, it comes in contact with decomposing waste ranging from food wastes to factory wastes even to hazardous wastes. That water can then leach elements from the wastes and become contaminated forming what is typically called landfill leachate. Leachate has the potential to cause many health problems if allowed to reach the groundwater and every effort is made to slow and minimize its effect. The most common way of dealing with leachate is to pump it out of the base of the landfill with a series of pipes and pumps, but what about the treatment of the leachate *in-situ* through the use of a permeable reactive barrier? Is it a viable solution?

## **Depletion of Dissolved Oxygen in the Closed, Stratified Estuary of the Russian River, California**

Presenter: Aaron Tamminga, Environmental Science, Geography  
Faculty Supporter: Dr. John Largier, Coastal Oceanography, University of California, Davis

The Russian River Estuary in Sonoma County, California is a threatened ecosystem that provides an important habitat for salmonids (e.g. Coho salmon, Chinook salmon, and Steelhead trout) during several life stages. Periodically, the tidal inlet of the estuary is blocked when wave action overcomes tidal and river flows, creating a sand barrier. The resulting cessation of tidal mixing in the estuary causes persistent water column stratification between saline bottom-waters and fresh surface waters. The bottom-waters are then isolated from atmospheric oxygen inputs and dissolved oxygen declines, reducing available habitat for salmonids. To examine this problem, we compared time-series data of dissolved oxygen levels during past closure events with directly-measured biochemical oxygen demand (BOD) levels. We found that bottom-water dissolved oxygen concentrations typically reached hypoxia (<3 mg/L) in less than four days. BOD levels in the estuary were highest in bottom-waters, especially in deep scour-holes upstream where water is trapped and riverine organic matter accumulates. Water column BOD due to the decomposition of organic matter accounted for a majority of observed oxygen consumption rates. We found little evidence of re-oxygenation of the bottom-water while the inlet remained closed (typically periods of less than 10 days). Although further study is required to determine oxygen dynamics throughout a longer closure period, the persistence of bottomwater hypoxia during the events we examined is an important consideration for estuary and watershed management.

## **Wild vs. Farmed: Metal Bioaccumulation and Food Web Transfer in Fish of Qiandao Hu, China**

Presenter: Matthew Ponsford, Biology  
Faculty Supporter: Dr. Linda M. Campbell, Environmental Studies, Biology  
Committee Member: Dr. Yuxiang Wang, Biology  
Graduate Mentor: Roxanne Razavi, PhD Candidate, Biology

Metal and elemental contamination in the environment is widespread. Some metals can be toxic at very low concentrations, rapidly accumulating within fish tissues and other organisms. In this study, food web transfer of ten elements are assessed for the fish of Qiandao Hu, a man-made reservoir in Zhejiang province, eastern China. This study site, with its 1,078 islands and reputed to contain pristine blue waters, is a major tourist attraction within China. Every year, thousands of Chinese tourists visit the lake for the farmed bighead carp harvest, and the wild fish are highly sought after. In fact, several major markets around the lake sell Qiandao Hu fish at a premium. Furthermore, fish make up a large part of the Chinese diet with the country consuming over 14 million tons each year. Our questions for this study are: (1) Do trends in metal bioaccumulation between fish markets in a large city and a fishing town differ? (2) Are metal accumulation trends and concentrations in wild vs. farmed fish species different in Qiandao Hu? It was hypothesized that wild fish from Qiandao Hu would exhibit higher overall metal concentrations compared to farmed fish. This is because farmed fish consume a consistent fish feed diet, have fast growth rates that lead to growth dilution, and typically exhibit only 1-2 trophic levels; differentiated from the natural food web. Elemental analyses conducted via ICP-OES included arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), nickel (Ni), potassium (K), rubidium (Rb), and zinc (Zn). Some metals, such as K and Zn, are essential to biological function, whereas others, such as As and Pb, are considered non-essential for most organisms. As well, some elements, such as Zn and Cd, are known to biomagnify throughout the food chain, whereas elements such as Cu and Cr are known to bioaccumulate in only a few organs. The expected findings from this study will indicate that wild fish

contain many elements in higher concentration due to biomagnification in a natural food web, whereas farmed fish may be most susceptible to elevated metal concentrations from fish feed.

### **Ancient Atmospheric Lead Pollution**

Presenter: Julian Varaschin, Classics

Faculty Supporter: Dr. George Bevan, Classics

In the early 90s, evidence was found in ice cores taken from Greenland of increased levels of ancient atmospheric lead, preserved by way of the annual precipitation that eventually formed into ice sheets. Since that time, similar records of atmospheric lead pollution have been uncovered in myriad other naturally forming deposits, including lake sediments and bogs. These records of lead pollution are presumed to reflect an increase in anthropogenic atmospheric lead pollution as metal became more heavily utilized by ancient peoples. This pollution confirmed for many the size and sophistication of the Roman economy. The records exhibit a clear peak around the beginning of the first millennium, roughly the midpoint of the Roman Empire and such levels were not seen again until after the industrial revolution was well underway. This peak in atmospheric lead is thought to show the climax of Roman Industry, followed by a subsequent decline and historians and scientists have sought to use this evidence as a proxy for the ancient world economy, but more specifically for the so called rise and fall of the Roman Empire. This presentation will explore the science behind linking the atmospheric lead pollution to Roman mining activities and why lead pollution is so strongly thought to reflect the roman economy. Alternative theories as to how atmospheric lead was produced in such quantities will be explored, including, increased agriculture and wood burning. Lastly, confounding factors will be considered such as volcanism and other ancient sources, including mining in Asia Minor and Han China.

### **Climate Change and Connectivity: Are Corridors the Solution?**

Presenter: Sarah-Taïssir Bencharif, Environmental Studies

Faculty Supporter: Dr. Ryan Danby, Environmental Studies

Species' habitats are affected by habitat fragmentation, degradation, and now, climate change. Island biogeography theory states that the number of species within any given habitat patches are affected by immigration, emigration, and extinction rates. Consequently, a general principle of biodiversity conservation has emerged stating that practitioners should try and connect habitat patches wherever possible. A great deal of attention and effort has been placed on implementing this principal into conservation programs at local, regional and continental scales by way of conservation corridors. Conservation corridors are habitat strips connecting two main patches together because habitat fragmentation can disrupt natural population dynamics by reducing species dispersal and even causing local extinctions. The goal of this project is to establish the significance and use of conservation corridors at different geographic scales as a conservation management tool to the effects of climate change on habitat and biodiversity. Climate change will cause changes to mean annual temperature, precipitation patterns, the incidences of severe weather events, and the frequency and intensity of disruption regimes such as forest fires. The effects of climate change as well as habitat degradation and fragmentation will compromise species' ability to adapt their habitat ranges to new climate. Analyzing case studies drawn from the peer-reviewed literature shows that the implementation of corridors at bigger scales would best mitigate the effects of climate change and maintain the integrity of ecosystems. The results from this study will provide important future directions to conservation policy-makers.

## **Temperature Sensitivity of Soil Greenhouse Gas Production in Three High-Arctic Plant Community Types at Cape Bounty, Nunavut**

Presenter: Evangeline Fisher, Geography

Faculty Supporter: Dr. Neal Scott, Geography

Enhanced precipitation and higher temperatures are expected in the Arctic as the result of future climatic warming. To understand future contributions of high-arctic ecosystems to the climate system, we need to understand the feedbacks between climate and greenhouse gas production, and how they might vary between plant community types distributed along soil moisture gradients. We incubated intact soil cores in the laboratory to explore the temperature sensitivity of soil greenhouse gas ( $\text{CO}_2$ ,  $\text{CH}_4$ ,  $\text{N}_2\text{O}$ ) production across the three main plant community types of Cape Bounty, Nunavut: polar desert, mesic tundra and wet sedge. Two sets of cores (0-10 cm mineral soil) were incubated in the laboratory at 4, 8, and 12°C for one month. We also measured plant community differences in soil thermal regimes for one year. Mean field temperatures were highest in the polar desert during the summer months, while temperatures in the mesic tundra were lowest during this time. In the winter, soil temperatures were lowest in the polar desert and highest in the wet sedge communities. Initial incubation results demonstrate  $Q_{10}$  values for  $\text{CO}_2$  production ranging from 2.18 in wet sedge to 8.67 in polar desert soils. We observed a  $Q_{10}$  of 4.03 for  $\text{CH}_4$  output in mesic tundra soils and a  $Q_{10}$  of 16.42 for  $\text{N}_2\text{O}$  output in wet sedge soils. Our results suggest that use of single  $Q_{10}$  values to predict future greenhouse gas emissions from high-arctic ecosystems would likely underestimate the contribution of these ecosystems to the global climate system in a warmer climate.

### **Session VIII: Social Inequities**

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

**Friday, March 5, 1:00-2:20**

**Moderator:** Anne Johnson, Education

### **Aboriginal Women's Increased Rates of Abuse Compared to Non Aboriginal Women Due to Contributing Factors of Poverty, Isolation and Substance Abuse**

Presenter: Erin McManus, English

Faculty Supporter: Dr. Susan Wilcox, Gender Studies

In the past 30 years it has been documented that over 520 aboriginal women have either gone missing or have been murdered in Canada (Native Women's Association). Although Aboriginal women represent only 3% of the Canadian population (Violence Against Aboriginal Women and Girls), they are over represented as victims of racialized, sexualized violence, and are often targeted because of contributing factors that increase their susceptibility to becoming victims of violence. I will be presenting the results regarding how in Canada, aboriginal women experience higher rates of violence and abuse while living on reserves compared to non-aboriginal women, specifically in regards to how poverty, substance abuse and isolation contribute to the increased rates of violence. Through interrogating these factors, I will provide a reading as to why aboriginal women are more susceptible to higher rates of abuse, so that strategies can be developed to reduce violence and therefore focus on prevention, support and protection for the victims and their families. By researching the contributing factors that increase the rates of violence towards aboriginal women, the social obstacles can then be challenged and changes can be made to the current configurations, decreasing the rates of violence. There are ways in which these factors can be decreased and improvements can be made that will lessen the rates of abuse. With an increase in awareness about these issues in Canada, these problems can be targeted and in time, become problems of the past.

## **Passing the Buck? Neoliberal Restructuring and the Transformation of the Live-in Caregivers Program to Keep “Women’s Work” Undervalued and Out of Sight in the Canadian Workforce**

Presenter: Katherine (Kate) Flynn, Global Development Studies

Faculty Supporter: Dr. Abigail Bakan, Political Studies

In recent years, Canadian policies have reflected global trends towards neoliberal restructuring and a determination to participate in globalization processes. The emphasis is now on less government “interference” in order to encourage greater flows of capital, goods, and labour. At the same time, Canada has become increasingly dependent on migrant labour in order to fill “labour shortages;” in particular, the number of temporary Filipina migrant workers in Canada has risen dramatically over the last thirty years. While rhetoric states that government cutbacks in social spending, services, and regulation will benefit us all, questions arise about whose labour and spending will fill in these gaps left by a lack of public services. My research, based on a comprehensive overview of related literature, will demonstrate that in the end, these cutbacks in government spending have far-reaching and profoundly gendered effects; Canadian women are greatly impacted by these reductions in government involvement. Furthermore, a disturbing trend is arising. Many women are now using the Live-in Caregivers Program as a means of using their privilege to buy their way out of their gender subordination through the purchase of migrant labour. In the end, I conclude, that this is neither a sustainable nor appropriate means of dealing with Canadian household insecurity. Furthermore, the vulnerability of these workers and the restrictions on their opportunities while within Canadian borders is a true testament to long-term societal issues in Canada that must be addressed in order to create a more just Canadian society.

## **Predictors of Antiretroviral Treatment Initiation Among Foreign-Born HIV Patients in Ontario: Perspectives from the OHTN Cohort Study**

Presenters: Sean O’Loughlen, Amir Rumman, Life Sciences

Faculty Supporter: Dr. Wendy Wobeser, Medicine

Collaborators: Kathryn Rutherford, Medicine; Dr. Janet Raboud, Division of Clinical Investigation & Human Physiology, Toronto General Research Institute

Inequalities in the provision of antiretroviral therapy (ART), used in the treatment of HIV, to infected foreign-born patients have been documented in the developed world. However, there has been no systematic survey of this phenomenon for Ontario. This study aims to explore whether treatment inequalities exist between Canadian-born and foreign-born HIV-infected persons living in Ontario by assessing immunologic status at initiation of ART. We conducted a retrospective analysis of HIV-infected patients registered in the Ontario Cohort Study. Patients were stratified according to region of birth. Median CD<sub>4</sub> cell count at ART initiation was compared for Canadian-born and foreign-born patients. Bivariate analysis of sex, age at diagnosis, age at ART initiation, most recent CD<sub>4</sub> cell count, time from diagnosis to ART initiation and proportion of patients initiating ART at CD<sub>4</sub> cell count <200 cells/μl was also undertaken. 2717 patients were included in the analysis. 1969 were Canadian-born and 747 were foreign-born. Canadian-born patients also had a greater proportion of males, greater time from diagnosis to ART initiation and earlier age of diagnosis. Foreign-born patients are more likely to initiate ART at CD<sub>4</sub> cell count <200 cells/μl. Immunologic response to ART showed similar increases in CD<sub>4</sub> cell count from baseline for all world region of birth groups. The findings indicate shifting trends in the population of persons afflicted by HIV. Differences were noted between the Canadian-born and foreign-born demographic with respect to immunologic, demographic and socioeconomic characteristics underscoring the need for new socio-cultural paradigms in HIV treatment stratagems.



## **Should Canada Adopt One Official Measure of Poverty?**

Presenter: Xiao (Trevor) Lin, Economics, Music

The purpose of this paper is to examine whether or not Canada should adopt one measure of poverty. Currently, some examples of poverty measures found in Canada include LICO (low income cut-offs), MBM (market basket measure) and LIM (low income measure). A policy analysis framework will be taken in order to first define our challenge at hand and to propose recommendations to address our problem. Throughout this exercise, a global viewpoint will also be taken to assess the different measures of poverty around the world, including those used in European countries.

### **Session IX: Media**

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

**Friday, March 5, 1:00-2:20**

**Moderator:** Dr. Sidney Eve Matrix, Film and Media

## **Google Street View: Public Outcry Valid but Misdirected**

Presenter: Aliya Kassam, Sociology

*"...fear founded on mere possibility is less helpful than wariness grounded in understanding." (Monmonier 2002: 2)* Emergent technologies which manifest and are popularized by surveillance practices are often promoted in ways that betray biases, conspiracy, or determinism. These approaches do nothing to further an academic examination of such innovations and as such, only serve to perpetuate fear. There is an undeniable technological trend towards digitization and cartography is no exception: Google Street View illustrates this change. Predicting the success or failure of particular products and trends is irrelevant. However, tracking the sociological progress of these technologies permits an invaluable insight into the workings of our social world. These technologies alter our understanding of maps, changing the conditions of our experience from static knowledge to electronic dynamism. In my examination of the mapping tool, I attempt to deconstruct popular (mis)conceptions/perceptions surrounding the application, arguing that the media habitually approaches the application with a lens that either trivializes or sensationalizes its properties and usages. As a corollary of this, mass media tends to provide blanket coverage on fashionable topics, while simultaneously avoiding the examination of potentially more questionable social and political implications.

## **Reverse Butterfly Effect: Saving Alternate Histories of Virtual Worlds**

Presenter: Zi Ye, Cognitive Science

Chaos theory is a recent field of study which has become extremely influential in science and in popular culture. Chaos theory deals with complex, non-linear systems which are extremely sensitive to their initial conditions (commonly known as the butterfly effect), and whose behaviour quickly become unpredictable over short periods of time. Despite their seemingly random nature, chaotic systems are fully deterministic. This means that the same initial conditions will always yield the same future states. When I looked at the butterfly effect backwards, and applied it to computer simulations, the result was a way to store many alternate histories of virtual worlds in a very small amount of data. This time storage model may have applications in scientific simulation, gaming, and cryptography, and provides a different look at chaos theory.

### **What are the Chances...?**

Presenter: Nathalie Moon, Mathematics and Statistics

Faculty Supporter: Dr. Glen Takahara, Mathematics and Statistics

We deal with 'probabilities' every day of our lives. Often, we weigh our chances instinctively, based on intuition or past experience. But how well does this really serve us? The math behind probability theory can be brought to bear on countless real-life situations in many fields, including clinical trials, weather forecasting, insurance policies, and scientific experiments. By studying a simple probability paradox, we will highlight the discrepancy between intuition and reality. What are your chances of learning something in this session? One hundred percent!

### **Initial Use of Foreground Objects in Understanding Visual Scenes**

Presenter: Catherine Jee, Psychology

Faculty Supporter: Dr. Monica Castelhana, Psychology

The present study examined how we recognize real-world scenes. Previous studies suggested that, in a single glance, we could extract enough information from a visual scene to understand a scene's category (e.g., kitchen, living room, bedroom). However, it is yet unclear what type of visual information leads to this understanding. The experiment investigated whether global information from the whole scene or local information from individual objects is critical. Global information refers to large-scale, immovable structures in the background of a scene (e.g. kitchen cabinets). Local information refers to smaller-scale, movable objects in the foreground of a scene (e.g. kitchen table). Participants were briefly presented with a scene in which the set of foreground objects belonged to one scene type, and the background belonged to another scene type. After the presentation of the scene, a name of the target object that was consistent with either the foreground (e.g. blender in kitchen) or consistent with the background (e.g. coffee table) was presented. Participants decided whether the target object is likely to appear in the scene. If local foreground information was initially used to activate scene gist, there should be a higher response rate towards the foreground-consistent target. If global background information was initially used, there should be a higher response rate towards the background-consistent target. Preliminary results suggest that participants used the foreground-consistent target objects more often. This suggests that we may initially use local information to understand scenes.

## **Session X: Conflict and Conspiracy**

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

**Friday, March 5, 2:30-3:50**

**Moderator:** Dr. Jackie Davies, Philosophy, Gender Studies

### **"Star Wars, Eh?": Canadian Aerospace Policy and the Militarization of Outer Space**

Presenter: Raymond K. MacKinnon, History

Faculty Supporter: Richard Goette, History

Canadians rightly pride themselves on their technological achievements in outer space. Heralded as a pioneer with several "firsts" in space exploration, public perception is that Canada explores the "final frontier" in the name of peace. This is the myth perpetuated by scientists and politicians alike, distorting clear evidence to the contrary. This study aims to rectify this fallacy by demonstrating that Canadian space initiatives were a product of Cold War relations, a need for domestic and international security against the threat of nuclear war. Contextualized within the paradigm of a bipolar world, an ostensibly civilian space program only thinly veiled military objectives. Consulting military, political and scientific sources from the end of the Second World War to contemporary conflicts, what emerges is a complex

relationship between civilian and military initiatives. Balancing demands from the United States for hemispheric security against the increasing threat of the Soviet Union whilst maintaining sovereignty over Canadian territory presented immense challenges to government leaders. Coupled with a shrinking defence budget, space research fulfilled specific niche roles in Canadian-American relations. Deconstructing the objectives of prominent satellite programs, Canada-U.S. (CANUS) agreements, and concomitant government sponsored defence research into theoretical space programs reveals policy marked by the vestiges of war. Peaceful orientations toward outer space perpetuated in historical literature sets a dangerous precedent. Future conflicts will not always pit technologically advanced societies against underdeveloped armies, and ignoring the military advantages of outer space could prove a fatal mistake in confrontations that will assuredly come.

### **Defence in Depth: Beyond Roman Grand Strategy**

Presenter: Michael Apps, Classics

Faculty Supporter: Dr. George Bevan, Classics

Many scholars have struggled to define and characterize the Late Roman Empire's defensive policy, in order to understand the underlying causes of the defensive deterioration, which some have seen as a factor in the fall of the Western Roman Empire. In 1976 American theorist Edward Luttwak published his *Grand Strategy of the Roman Empire*, which defined the defensive evolution of the third century as Rome's pragmatic shift towards a policy of 'defence in depth', whereby the military would abandon their traditionally static frontier security policy in exchange for a fundamentally elastic one. Was the Empire capable of designing a 'grand strategy', and did it have the command-control capacity for such endeavours? Did the Romans commit a devastating strategic blunder by withdrawing the military presence that had for so long subdued the will of the migratory peoples in the periphery? Critics have accused this 'defence in depth' hypothesis of failing to factor in strong literary and archaeological evidence that contests the theory, while relying heavily on modern military concepts and terminology. Ongoing research has indicated that while this Late Roman strategy was executed in various forms throughout the empire, the essential approach of the military was dictated through a well defined operational framework. This paper asserts that Roman defence in depth was a consciously adopted policy of the Roman state and addresses some of the main criticisms presented by scholars who refute the possibility of this system's existence.

### **Conditioning Factors in the Usage of "Conspiracy Theory"**

Presenter: Bryor Snefjella, Linguistics

This study attempts to create a clear definition of the term "conspiracy theory" using a survey method. The term sees currency in media and social settings, especially with the proliferation of the internet and events such as 9/11, but there is not an adequate understanding of how the term is used. Queen's students were surveyed to determine conditioning factors in their usage of the term. The students were presented with a set of fifty hypothetical claims that a certain event had occurred or is occurring, and then were asked whether the claim is a "conspiracy theory" to them or not. Fifty-nine students were surveyed. The analysis of the resulting data reveals that collectivity is not a conditioning factor for usage; the actions of groups and individuals were treated almost identically, with both consistently deemed "conspiracy theories" in the data. Specific factors, such as the presence of an assassination or aliens, were identified. Hypothetical claims designed to be "strange" also scored consistently high. Gender was ruled out as a factor, as was the nation implicated in the claim, either Canada or the United States. The results show that the term has specific factors which condition usage. Also, the unimportance of collectivity as a factor contradicts most academic definitions of the term. What this study might have revealed is that there is a vernacular, popular usage that differs from the academic usage.

## **Echoes of Kafka: The “War on Terror”**

Presenter: Ryan Binkley, German

Faculty Supporter: Dr. Jill Scott, German

The issue of international terrorism at the beginning of the 21<sup>st</sup> century, in the United States in particular, has left populations asking: “who and where is the enemy and how do we bring them to justice?” But a more important question could be “Who is the victim and who is not, and what measures are appropriate while minimising collateral damage?” Peeling away the complex layers in the politics of anti-terror policy leads to the inevitable conclusion that long gone are the alleged days of “black and white” cases of nation-wide warfare. Franz Kafka all too often warns of the psychosocial pressure that follows as a result of the hegemonic power dynamic, and though imperialism was no new concept in Kafka’s era, his concerns shine ever brighter in light of the rise of the neo-colonial anti-terror initiative. Politics aside, this situation is a powerful echo, prophecy even, of a host of Kafka’s literary works, which warn of a ‘psycho-dystopian’ world of torture machines on colony-island penitentiaries, of summary executions and the breaching of basic human rights to achieve a government’s desired end. In this presentation, I will demonstrate how *Der Prozeß (The Trial)* – with its parallels to the ethereal nature of law- is still relevant to the case of the U.S.-led “War on Terror” in a world of liberally accessible media and information, spreading discontent and paranoia in the hearts and minds of the very population that the anti-terror policy is designed to “protect”.

## **Session XI: Art Reflecting Life**

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

**Friday, March 5, 2:30-3:50**

**Moderator:** Dr. Stephanie Dickey, Art and Art History

## **Steeped in Modernism: The Teapot as Manifesto in Early 20<sup>th</sup> Century Art**

Presenters: Maya Bielinski, English, Art History; Ashley Williamson, Drama

Faculty Supporter: Dr. Natalie Rewa, Drama

The art manifesto, a written political, social, and artistic proclamation of an artistic movement, surged in popularity among avant-garde art groups in the first half of the twentieth century. Many of the manifestos featured declarations for the synthesis of art and life as well as a call for social and political power for artists of both 'high' and 'low' art forms. Concurrently, new artistic interpretations of the humble teapot became suddenly ubiquitous. This inquiry explores how the teapot emerged as a dominant symbol for the goals of Modern Art movements, and includes an analysis of the teapot's socio-political history, its ambiguous status between high and low art, and its role in the commercial sphere. By examining the teapots of Suprematism's Kazimir Malevich, Constructivism's Mariane Brandt, and Surrealism's Meret Oppenheim, this presentation will track ideas of functionality, the teapot as symbol, and aesthetics from 1923 to 1936. This small window in time offers an analysis of the extraordinary developments in teapots, and perhaps a glimpse of the paralleled momentum that occurred more generally in design, architecture, and the other arts in this time period.

## **Craftivism!: The Possibilities and Problems of Craft as a Mode of Feminist Community Building and Social Action**

Presenter: Kaleigh Alkenbrack, Gender Studies

Faculty Supporter: Dr. Susan Wilcox, Gender Studies

Craftivism! is a knitting collective that creates baby blankets to be given to mothers through the Healthy Aboriginal Babies Program run by the Katarokwi Native Friendship Centre in Kingston, Ontario. The

group of students and community members come together to knit blankets with the aim of addressing and creating awareness about the material differences that Indigenous women experience. Craftivism! is a product of the do-it-yourself (DIY) ethic, a form of third-wave feminism in which crafting is used to honour women's history and work and to create feminist communities. While knitting has been embraced by third-wave feminists, knitting is a luxury that many cannot afford. Although the DIY ethic provides women with a sense of self-reliance and personal satisfaction, it is also self-indulgent. Thus, Craftivism! aims to celebrate the domestic arts in a mindful way by acknowledging and acting on the material differences that Indigenous women experience. To account for material inequalities without victimizing Indigenous women further, blankets are produced in partnership with women participating in the prenatal program. While Craftivism! promotes purposeful knitting in the spirit of the feminist goals of empowerment, social justice and community building, the project also serves as space to think about the effectiveness of reclaiming craft. Using data from the Craftivism! project, this paper will consider whether or not the valuing of craft is a feminist act, if knitting reinforces stereotypes of femininity, if knitting is an apolitical form of consumerism, and when it is possible for certain groups to engage in knitting as a political activity.

### **Lighting in Theatrical Performance as a Dynamic Medium**

Presenter: Alex Powell, Drama

Faculty Supporter: Dr. Tim Fort, Drama

Designing for the theatre is a tasking endeavour, particularly at an amateur level with a restriction of resources, time, and past experience. The question of where to draw inspiration, what research can be done, and the interplay between theories of stage lighting becomes a central issue for an aspiring lighting designer in an unfamiliar or, in some cases, an entirely new setting. With the majority of impactful lighting theory originating from the advent of electrical lighting at the turn of the twentieth century, most of its concepts derive from the staged realism from Belasco and, in direct opposition, Appia's notions of theatre transcending reality with lighting providing depth and description of space. With opposing concepts and an intangible media, creating mood, tone, and *mise en scène* through light requires significant forethought, as well as the ability to perceive a stage language lacking corporeality. With all of these present challenges, I attempt, through theory and practical examples, to describe the process of lighting a theatrical performance as well as what constitutes lighting in the theatre. I will attempt to examine the use of colour, texture, motion, and contrast as a vehicle for stage dialogue, as well as question the importance of lighting in performance and its place in the hierarchy of *mise en scène*, as defined by Appia in his research of Wagnerian opera and Eurhythmics.

### **20 Years of (Re)Unification: The Representation of Post 1989 Berlin in the *Achtung Berlin!* Film Series**

Presenters: Susanna Miller, Tara Nadolny, Trevor Blakeney, Jude Hirman,  
Flavia Zaka, German

Faculty Supporter: Dr. Jennifer Hosek, German

Twenty years have passed since the political unification of East and West Germany. In 1989, the fall of the Wall had symbolically presaged this ostensive reuniting of two halves of not only a divided city, but a divided nation. Since this new "year zero", filmmakers have documented the reshaping of Berlin, a metonymy for the Federal Republic. While scholarship on literary works situate this "New Berlin Republic," an equivalent does not exist for film. We aim to explore the new capital by focusing on *Achtung Berlin!* because of the importance of this festival to the German film landscape as a whole and the metropole in particular. *Achtung Berlin!*, the self-titled "New Berlin Film Awards," is a unique contributor to the creation of the New Republic. Begun in 2005 in response to a lack of German content in Berlin's festivals, *Achtung Berlin!* presents contemporary films whose production have a strong

connection to Berlin and the surrounding state of Brandenburg. Analyzing *Achtung Berlin!* and its films, we address (re)unification by utilizing the notion of "space" in its shifting forms. The interrelated themes of identity, urbanness, and mobility in (trans)national perspectives reveal the contested nature of the aftermath of the Berlin Wall- whose fall stands as a concrete "success" story in the amalgamation of "a" people. Our project endeavors to account both for Berlin's unification and the dis/contents that are still issues today.

## POSTER PRESENTATIONS

### Session XII: Poster Presentations

Queen's Learning Commons, Stauffer Library

Presenters will be present at posters Friday, March 5, 11:30-1:00

Posters will be on view March 4 & 5

#### 1. Toxicity of Fresh and Weathered Sunken Heavy Fuel Oil to the Early Life Stages of Rainbow Trout (*Oncorhynchus mykiss*) in Simulated Spawning Shoal Environments

Presenter: Julie Adams, Biology

Faculty Supporter: Dr. P. V. Hodson, Biology, Environmental Studies

Because the density of heavy fuel oil (HFO) is equal to or greater than that of freshwater, it behaves differently than lighter oils that float. Heavy fuel oil can sink to the bottom or be suspended in the water column and affect aquatic organisms that are not typically exposed to floating oils. Most research on oil spill technologies thus far examines the direct exposure of rainbow trout to floating or submerged oil droplets; there is little knowledge of the impacts of non-floating heavy fuel oil on the water column and benthic organisms exposed to oil that accumulates in sediments. The toxicity of sunken HFO 6303 and Medium South American (MESA; reference) crude oil, as well as the effects of weathering on toxicity to embryos of rainbow trout were assessed using increasing concentrations of oil on gravel substrate in continuous-flow desorption columns. Toxicity was assessed by measurement of the rates of mortality and growth, and the prevalence of blue sac disease, a hallmark sign of oil toxicity. The lower median lethal concentration for HFO compared to MESA indicated that HFO is more toxic. Interestingly, the LC<sub>50</sub> values for fresh and weathered for both oils were similar, indicating little change in toxicity when the oil weathers naturally. Repetition of this experiment and analysis of PAH content in each treatment will provide more insight into the environmental and health risks associated with sunken heavy fuel oil.

#### 2. Wild Wild East: The Animal as Oriental

Presenter: Pansee Atta, Fine Art

Horus, centaurs, werewolves, Batman...every culture has them. Fantastic animal-human hybrids that serve as totems, symbols of basic human needs and instincts deemed socially unacceptable and projected upon anthropomorphized living animals or imagined liminal beings. This allows humans to define themselves as civilized, restrained, rational - all that is not 'animal' - while allowing them an imaginary, socially sanctioned context in which they can live out their hedonistic desires. Animal biology becomes a construction that allows humans to define themselves in its opposition, in other words, it is Orientalized. The paradox is that these 'animalistic' traits are the closest we come to seeing that which is truly, essentially human. Norms of sexuality and violence may be culturally defined, but there is no culture that lacks a definition. Understanding 'animal instincts' becomes an entry point into another way of viewing the world, a means of accessing human experience, and a response to the dialogue on cultural hybridity.

### **3. Quantifying Sediment Deposition Patterns of Lake Underflows Using a Novel Underflow Sediment Trap**

Presenter: Anthony Bassutti, Geography  
Faculty Supporter: Dr. Scott Lamoureux, Geography

Lake underflow deposition is an important limnological process which greatly affects sediment deposition patterns and lake varve formation. Currently no feasible, cost-effective device or method has been regularly utilized to quantify sediment deposition patterns. This study utilizes a novel underflow trap which was deployed at two locations at the bottom of a High Arctic lake subject to seasonal river inflow. It was found that a peak in lake bottom temperature departures, lake bottom turbidity, and river suspended sediment concentration are strongly associated with peak underflow deposition events. Furthermore, evidence shows that deposition amounts are greatly reduced as underflow distance increases. One year was also found to show a clear lag in deposition patterns between two distant stations. This method of quantifying underflow deposition is useful for determining deposition patterns over time and space. This knowledge is useful in monitoring the changes in the lake bottom waters, and for aiding in the reconstruction of past sediment deposition patterns.

### **4. Differential Impairments in Incentive Learning Caused by First- and Second-Generation Antipsychotic Drugs**

Presenter: Matthew Florczynski, Psychology, Biology  
Faculty Supporter: Dr. Richard Beninger, Psychology

Schizophrenia is a neuropsychiatric disorder characterized by increased function of dopamine in the brain. Dopamine release is a natural response to reward. It promotes incentive learning (IL), a process by which neutral stimuli acquire the ability to elicit approach and other responses. A recent model characterizes dopamine-mediated IL as a progressive process with early and late stages accompanied by a shift in neural control from the nucleus accumbens (NAc) to the dorsolateral striatum (DLS). A parallel can be drawn to differences in regionally specific neural responses generated by first- and second-generation antipsychotic drugs (APDs) used to treat schizophrenia. APDs are dopamine receptor antagonists, but first-generation APDs affect the NAc and DLS while second-generation APDs affect primarily the NAc. We compared the effects of APDs on IL. Rats ( $N = 48$ ) were trained to press a lever for food pellets in an operant chamber. Intraperitoneal injections (1 hr before testing) of the first-generation APD haloperidol (0, 0.05, 0.10, 0.20 mg/kg) or of the second-generation APD risperidone (0, 0.20, 0.40, 0.80 mg/kg) induced dose-dependent suppression of lever pressing on days 1-4, with the highest dose groups failing to demonstrate any evidence of previous learning on day 5 when tested drug-free. On days 16-20, haloperidol induced a day-to-day suppression not seen with risperidone. The results suggest that the effects of first- and second-generation APDs on learning processes putatively mediated by the NAc and DLS can be differentiated experimentally. The findings imply that APDs may differentially affect IL in patients with schizophrenia.

### **5. Applying Data Mining Methods to Blast-Related Mild Traumatic Brain Injury**

Presenter: Jillian Gauld, Biology

Mild traumatic brain injury (mTBI), or concussion, is one of the most common forms of injury sustained throughout Operations Iraqi Freedom and Enduring Freedom. Diagnosis is difficult for many of the symptoms are very common and may not manifest themselves immediately after the injury. Many studies on blast-related mTBI have been published from research regarding the current war in Iraq and Afghanistan. Continuous work is underway to more accurately determine its causes and symptoms, as mTBI is considered difficult to diagnose. Using the Oak Ridge National Laboratory (ORNL) developed data mining software PIRANHA, an integrative literature analysis was conducted to assist and facilitate possible research on the processes of mTBI. Data were collected from academic databases as well as



PIRANHA's internet search function. The PIRANHA categories feature was employed to visualize the areas of overlapping research regarding manifestations of mTBI relating to the biological processes and behavioral changes. PIRANHA was also used to review current research on mTBI, including animal testing on mice and swine. The integrated results from these data mining analyses revealed areas that could be studied further, as well as a clearer indication of the specific processes of mTBI. These results can contribute to ORNL's current LDRD, an mTBI-specific project.

## **6. Effect of Erk vs. PI3 Kinase Activation by the Middle Tumour Antigen of Polyoma Virus Upon Gap Junctional, Intercellular Communication of Cultured Cells**

Presenter: Samantha Greer, Life Sciences (Pathology & Molecular Medicine)

Faculty Supporter: Dr. Leda Raptis, Microbiology and Immunology, Pathology and Molecular Medicine

Gap junctions are protein channels that permit the passage of small molecules and ions between adjacent cells. Gap junctional permeability is thought to lead to decreased cellular proliferation. In fact, a number of oncogenes, such as the middle tumour antigen of polyoma virus (mT), are known to interrupt gap junctional, intercellular communication (GJIC). The Ras/Raf/Mek/Erk and phosphoinositide 3-kinase (PI3 kinase)/Akt signalling pathways, two commonly studied pathways in malignancy, are both activated by mT, and are both required for complete transformation by mT. This study is the first to investigate the effects of Erk vs. PI3 kinase activation by mT on GJIC in cultured cells. To this effect, two mT mutants, impaired in their ability to activate either the Erk or PI3 kinase pathway, were expressed through retroviral infection in rat liver epithelial T51B cells which have extensive GJIC. A novel *in situ* electroporation technique was used to quantitate the degree of GJIC in T51B cells expressing each mT mutant. The results showed that the Erk-activating mutant exhibited the interrupted GJIC that is characteristic of mT expression, while the PI3 kinase-activating mutant displayed levels of GJIC comparable to those observed in wild-type T51B cells. This suggests that Erk activation by mT is sufficient to suppress GJIC, while PI3 kinase activation, despite its contribution to neoplastic transformation, is unable to interrupt GJIC. Given the importance of GJIC in cellular proliferation, apoptosis and differentiation, identifying the pathways affecting gap junctional permeability may yield novel targets for cancer therapy.

## **7. Dkk-1/Ror2 and Wnt5a/Ror2 Production of CDX2: Defining Intestinal Adenocarcinoma**

Presenter: Jay Jantz, Life Sciences

Faculty Supporter: Dr. R. John MacLeod, Physiology

Wnt signaling regulates cell proliferation and differentiation through a homeostasis of canonical and noncanonical pathways. Aberrant Wnt signaling induces intestinal adenocarcinoma by promoting stem cell hyperproliferation. In the intestine, Wnt5a binds to its receptor Ror2 to increase the caudal homeobox factor CDX2, a transcriptional activator of intestinal differentiation. Contradictorily, it was also shown that Ror2 alone is overexpressed in adenocarcinoma, and that Ror2 alone will mediate CDX2 increase *in vitro*. The purpose of this research is to determine how CDX2 is increased by Ror2 alone and Wnt5a/Ror2. Human colon adenocarcinoma cells (HT-29, SW-480, and RKO) were used as an *in vitro* epithelial model. HT-29 cells constitutively express the signaling protein Dickkopf-1, whereas SW-480 and RKO do not. Wnt5a/rhDkk-1 was used to treat Ror2 or siRor2 transfected cells primed with MAP kinase pharmacological inhibitors. The results show that CDX2 was increased after Ror2 overexpression in HT29, but not RKO/SW480 cells. Further addition of Dkk-1 to RKO/SW480 cells resulted in CDX2 increase. Pharmacological inhibition of p38 MAPK, casein kinase 1, or Src kinase decreased CDX2 protein ~24% in Dkk-1/Ror2 cells, while inhibition of JNK, casein kinase 1, or Src kinase in Wnt5a/Ror2 cells decreased CDX2 protein ~35%. The conclusion is that Ror2 increase in CDX2 protein is dependent on Dkk-1 or Wnt5a. Dkk-1/Ror2 CDX2 production is mediated by the MAP kinases p38, CK1, and Src.

Wnt5a/Ror2 increases in CDX2 require JNK activation, but not p38 MAPK. Different signaling pathways, dependent on the presence of Dkk1/Wnt5a, offer an explanation for the seemingly contradictory increase in Ror2 alone seen in intestinal adenocarcinoma.

## **8. The Legacy of Robert Sutherland and the History of Racism at Queen's University**

Presenter: Victoria Mitchell, History

The history of racism at Queen's University is extensive, hardly researched, and often forgotten by the members and alumni of this institution and community. The inaction of Queen's University to honour the financial donation which saved the university in difficult financial times and the legacy of its exceptional alumnus Robert Sutherland for 148 years is a telling example of this history. This poster is an artistic and educational piece on Robert Sutherland's life, which balances providing information about dedications to him at Queen's since 1997 with exposing Queen's history of excluding the contributions of people of colour from its own history. As there is no visual representation of Robert Sutherland's life, this piece seeks to illustrate a subject who was "discovered" by students in the 1990s and whose legacy had thus been lost for over a century. These last two decades of efforts by students finally yielded the naming and dedicating of Robert Sutherland Hall on October 3, 2009. However, the originally adverse reaction of the Board of Trustees to the naming proposal and the exclusivity of the dedication event as put on by Queen's Administration must not be erased purposefully or through the passage of time. These realities are incorporated into the piece so that "the students of Queen's ensure [Robert Sutherland's] legacy lives on and that the contributions of people of colour are never again forgotten."

## **9. Epidemiological and Immunologic Profile in an Outpatient HIV Clinic in Southeastern Ontario**

Presenters: Amir Rumman, Sean O'Loghlen, Life Sciences

Faculty Supporter: Dr. Wendy Wobeser, Medicine

Kingston represents a unique enclave within Southeastern Ontario owing to the preponderance of correctional facilities within its environs, as well as its geographic location at the crossroads between three of Canada's largest cities – Toronto, Ottawa and Montreal. This gives the Kingston HIV epidemic a distinctive character. This study provides attempts to construct the epidemiological profile of HIV-infected patients in Kingston by two prognostic variables – CD4 cell count and viral load – to elucidate any trends in immunologic status and efficacy of treatment for patients followed at the Clinical Immunology Outpatient Clinic (CIOC) in Kingston, Ontario. We conducted a retrospective analysis of HIV-infected patients managed at the CIOC. Patients were stratified according to gender and year of diagnosis. Median CD4 cell count and viral load at first and most recent visit were compared for both groups. Bivariate analysis of age, gender, HCV co-infection, nadir CD4 cell count and proportion of patients achieving viral suppression was also undertaken. 528 patients were included in the analysis: 158 active, 106 incarcerated, 94 transferred, 93 known deceased and 77 lost to follow-up. There were 453 males and 75 females. Male patients had a greater age at diagnosis and a lower proportion of HCV coinfection. Female patients had a greater median CD4 cell count for both the first and most recent visit. There was no significant difference in viral load values between male and female patients. 439 patients had a year of diagnosis on file; 290 were diagnosed before 1997 and 149 were diagnosed in or after 1997. There was no significant change in gender distribution or HCV co-infection, but patients diagnosed after 1997 had a greater age at diagnosis, a greater first viral load, a greater most recent CD4 cell count and were less likely to be virologically suppressed at first visit. The demographics of patients presenting at the CIOC have been changing in concert with a broader Canada-wide shift. The findings of this study indicate differences in immunologic status and other prognostic parameters between males and females and a marked shift in demographic and immunologic parameters following the introduction of Highly Active

Antiretroviral Treatment (HAART) in 1997. New treatment stratagems will have to be implemented to reflect the changing face of HIV epidemic in Kingston and Ontario.

### **10. Cross-Cultural Examination of the Use of Affect as Information**

Presenter: Michelle Tong, Psychology

Faculty Supporter: Dr. Li-Jun Ji, Psychology

The function of mood and emotion in human behavior has long been a subject of interest for researchers and lay thinkers alike. Personal experience may tell us that our moods and feelings indeed influence our judgment of things like personal happiness or aesthetic quality. The affect-as-information hypothesis, however, distinguishes itself from intuition in that it asserts that our mood is used as an actual source of information in these judgments. Cultures differ in values ascribed to mood and affect, and thus may influence the degree to which affect is used in judgment. The present study examines cultural differences in the use of affect, or positive and negative moods, as information in evaluative judgment. The study represents an international collaboration between Queen's University and the University of Macau. In two experiments, we induced negative and positive moods in participants and randomly assigned them into conditions in which they were either made aware or not of the source of their mood. Participants were then asked to evaluate the attractiveness of images (Study 1) and rate their life satisfaction (Study 2). I hypothesize that the Chinese will rely less on affect as information than Canadians and propose that this attenuated dependence is mediated by lower clarity and less attention to mood on the part of the Chinese. Preliminary data from the University of Macau appear to support the hypothesis that the Chinese do not rely on affect as information.

## ALPHABETICAL LIST OF PRESENTERS

Presenter	Session #
Adams, Julie	XII
Alkenbrack, Kaleigh	XI
Apps, Michael	X
Atta, Pansee	XII
Babich, Emilija	III B
Bassutti, Anthony	XII
Bencharif, Sarah-Taïssir	VII
Bielinski, Maya	XI
Binkley, Ryan	X
Bishop, Peter	II
Blakeney, Trevor	XI
Boag, Angela	II
Boyes, Robert	VII
Buitenhuis, Amy	VI
Crossman, Rozena	III A
Dalby, Meaghan	III A
Doggart, Jennifer	I
Fisher, Evangeline	VII
Florczyński, Matthew	VI & XII
Flynn, Katherine (Kate)	VIII
Gauld, Jillian	XII
Gouinlock, Susannah	VI
Greer, Samantha	XII
Ha, Melissa	II
Heaven, Chelsea	I
Hirman, Jude	XI
Hopkins, Sydney	VI
Hu, Tina	V
Jantz, Jay	XII
Jee, Catherine	IX
Kassam, Aliya	IX
Killoran, Raissa	III B
Koon, Kelsey	II
Krause, Ana	VI
Lam, Nietzsche	IV
Lin, Xiao (Trevor)	IV & VIII
MacKinnon, Raymond K.	X
McCulloch, Gretchen	I & VI
McManus, Erin	VIII
McQuaid, Ryan	IV

Miller, Susanna	XI
Mitchell, Victoria	XII
Moir, Jonathon	V
Moon, Nathalie	IX
Nadolny, Tamara	III A & XI
Nartowski, Robert	III B
Neil, Allison	II
O’Loughlen, Sean	VIII & XII
Ponsford, Matthew	VII
Powell, Alex	XI
Rumman, Amir	VIII & XII
Sampson, Lauren	III A
Schaefli, Laura	III A
Snefjella, Bryor	X
Song, Celine (Ha-Young)	IV
Stephens, Trina	II
Tamminga, Aaron	VII
Timmers, Amanda	IV
Tong, Michelle	XII
Tracey, Amanda	V
Turliuk, Jennifer	I
Varaschin, Julian	VII
Wiginton, Lindsay	III B & VI
Williamson, Ashley	XI
Wong, Angelita	VI
Ye, Zi	IX
Zaka, Flavia	XI

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