University of St Andrews

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Laidlaw Undergraduate Internship Programme in Research and Leadership

Poster Brochure 2016

Introducing the project

The Laidlaw Undergraduate Internship Programme in Research and Leadership is an exciting opportunity, designed to allow undergraduates at the University of St Andrews to lead a summer research project of their choosing.

In the summer of 2016 forty-nine interns designed, pursued and reported on a research question of their own devising, working with an academic in their chosen School. The internships lasted between 8-10 weeks, and interns worked full-time on their project over the summer months.

In addition, interns completed two intensive, bespoke leadership training weekends to help equip them with the skills and values to become leaders in their chosen occupations beyond University.

The Programme is generously sponsored by Lord Laidlaw of Rothiemay.

Laidlaw interns 2016

Arts

Intern	Project Title	Project Supervisor
Marnie Adamson	'Could I do that to somebody?': The Ideological Shifts That Occur in the Mind of Conflict Personnel to Allow Them to Commit Atrocities	Professor Karin Fierke
Maria Almeida Reis	Iberian Long Sixties? Youth Culture and Gender in Spain and Portugal, 1958-1980	Dr Nikolaos Papadogiannis
Tyler Anderson	Transition, Transgression and Transcendence: Gender and the Propagation of Power in the Ancient Near East	Dr Madhavi Nevader
Alexander Bell	Encounters with memory: remembering the slave trade in Bristol, c. 1945-2015	Dr Riccardo Bavaj
Joanna Bowman	Royal Court Jerwood Theatre Upstairs (1995 - 2015), or how 85 seats can change British Theatre	Dr Sam Haddow
Sian Burkitt	Transactions of the Royal Society of Edinburgh	Dr Aileen Fyfe
Elinor Bushell	Mad, drunk and diseased or simply in love?	Dr Emma Buckley
Joel Butcher	Women in Church Leadership: How do Church Leaders Interpret the Bible?	Dr David Moffitt
Ann Choi	Internal Creation of Others in North-South Korea Relations	Dr Konrad Lawson
Katrina Drayton	Mapping Rome's Destiny: Navigation in Virgil's 'Aeneid'	Dr Nikoletta Manioti
Rory Forbes	Comprehending the Scottish Jacobite Constituency in 1688/89	Dr Steve Murdoch
Maryam Golafshani	Bringing the 'Human' Back to Medicine: Implementing Virginia Woolf's Writing in Medical Education	Dr Christina Alt
Margaret Hyland	Memories of Scottish Fishing Music	Dr Stephanie Bunn
Vienna Kim	Art on the Catwalk: Performance Art in the shows of Alexander McQueen	Dr Catherine Spencer
Eirinie Lapidaki	The Politics of Poetry in Victorian Britain	Dr Clare Gill
Suzanne McManus	Irvine Welsh's Scotland: The Reality of Working Class Brutality, Addiction and Abuse.	Dr Peter Mackay
Daniel Payne	Henry S. Salt and Animal Rights: 'A Whole-Minded Reverence For All Our Fellow Beings'	Dr John Clark
Kelly Schweizer	The Changing Face of Fear: An examination of the Gothic Genre	Dr Katie Garner
Tadeusz Wojtych	Not so iron curtain. Interactions between international students and local people in Gdynia (Poland) during the communist period.	Dr Bernhard Struck

Intern	Project Title	Project Supervisor
Olivia Morton	The role of Austrian Standard German in the teaching and learning of German as a foreign language	Dr Christopher Beedham & Ms Kirsten Mericka

Science

Intern	Project Title	Project Supervisor
Samuel Boobier	The mechanism behind Amino Acid Dating: what factors affect the racemisation of amino acids?	Dr Tanja van Mourik
Botond Hajdara	Partitioned Binary Relations	Dr James D. Mitchell
Jack Jameson	Determining the Role of MG23 in hypoxia-induced apoptosis	Dr Samantha Pitt
Matthew Kaminski	Can the geochemical signature of deep oceanic sediments from the rock record contain a paleo-atmospheric CO_2 signal?"	Dr James Rae
Ryan Moodie	Non-equilibrium Model of Photon Condensation	Dr Jonathan Keeling
Katie Munro	Understanding the Role of HLA-B27 in Inflammatory Arthritis	Dr Simon Powis
Asmithaa Prabhakaran	The role of innate immunity pathways in host-parasite interactions during microsporidia infections	Dr John Lucocq
William Skinner	Proton-Coupled Electron Transfer and White Emission of Light in Supramolecular Iridium Complexes	Dr Zysman-Colman
Finlay Smith	Computing translations and the translation hull of semigroups	Dr James Mitchell

Social Science

Intern	Project Title	Project Supervisor
Ioanna Batzoglou	What is the relationship between institutions and entrepreneurial activity?	Dr Alex Trew
Sarah Bigelow	Speaking Security Through Arabic: The Role of the Media in Translation	Dr Faye Donnelly
Mary Chan	Sex differences in workplace behaviour: The role of BIS/BAS scale sensitivity	Dr Catherine Penelope Cross
Jakob Dowling	Using Willingness-to-Pay Observations to Improve Climate Change Negotiations	Mr Luc Bridet
Sarah Glass	An analysis of US foreign policy towards Zimbabwe during the Matabeleland Massacres, 1982 - 1985	Dr Hazel Cameron
Konstantinos Liverakos	The effect of physical exercise intensity levels on cognitive performance examined throughout the period of one day	Dr Akira O'Connor

Intern	Project Title	Project Supervisor
Rhys Madden	How to engage the next generation of anthropologists - an application of theoretical approaches in Museum Studies	Professor Roy Dilley
Shashank Manjunath	Are we all heading down the same path? The developing world's approach to an environmentally secure future	Dr Eoin McLaughlin
Mai Nguyen	The participation of children in the Vietnam war	Professor Alison M S Watson
Joanna Rutkowska	The influence of facial health cues of a defendant on decisions about the severity of punishment	Professor David Perrett
Alessio Shostak	Striking at their Core: De-funding the Islamic State	Dr William Vlcek
Alanood Sinjab	The Securitization of Torture: A Legal Analysis of the General Security Service's Use of Torture in the Palestinian Occupied Territories Between 1971-1991	Dr Faye Donnelly
Justyna Slowik	The Paper Dragon: Do we overrate China's strength as a global superpower? The domestic factor.	Professor Ian Taylor
Melissa Turner	Real and perceived barriers to participation in HE: a fulltime undergraduate student parent's perspective	Dr L Lasselle
Karina Vitanova	Leptin and the Mitochondria: New pathways to protect against dementia	Dr Gayle Doherty
Christopher Walker	Double Discrimination: LGBT Asylum Seekers in the UK System	Dr Gurchathen Sanghera
Alice Watson	How has tropicality been constructed in cultural media from the 1970s to the present day?	Dr Dan Clayton
Jessica Yin	The evolution and impact of identity in US-China relations	Dr Taryn Shepperd
Kejian Zhao	Human-Environment Relations in Beijing: Perceptions, Experience and Possibilities	Professor Peter Gow

The Laidlaw interns blogged about their research projects throughout the summer. To read more about how they found the process of research, and developed their leadership skills, visit: laidlawuginternships.wp.st-andrews.ac.uk

Experiencing leadership

As an important part of their internships, a four-day intensive leadership programme was provided to help develop the interns as future leaders in their fields.

The aims of the leadership programme were to allow the interns to:

- Better understand their own leadership style.
- Develop their ability to reflect, and derive learning from this.
- Lead a small team and receive feedback on their performance.
- Hear from experienced academic leaders.
- Understand the importance of research methods and ethics.
- Develop a sense of team amongst the Laidlaw interns.

The leadership programme was delivered by staff from the Centre for Academic, Professional and Organisational Development (CAPOD) and comprised of a mixture of input, discussion, guest speakers, practical activities and individual reflection.

The first two days of the programme took place before the internships began and focused on introducing the interns to leadership theory and key leadership skills. The final two days took place after the internships had been completed, and focused on reviewing the experience and developing further leadership skills for the short and longer term.

Weekend 1:

- Leadership traits
- Practising leadership
- Giving and receiving feedback
- Authentic leadership
- Leadership styles
- Research ethics
- Recognising bad leadership
- Time and Project management
- Personal development planning

Weekend 2:

- Briefing and communication skills
- Team dynamics and effective followers
- Leadership debate
- Resilience in leadership
- Collaborative leadership

"I enjoyed working in a team of people whom I hadn't met before. We built a team spirit and worked well together. The lectures showed interesting skills we can use in the future."

Laidlaw 2016 Intern

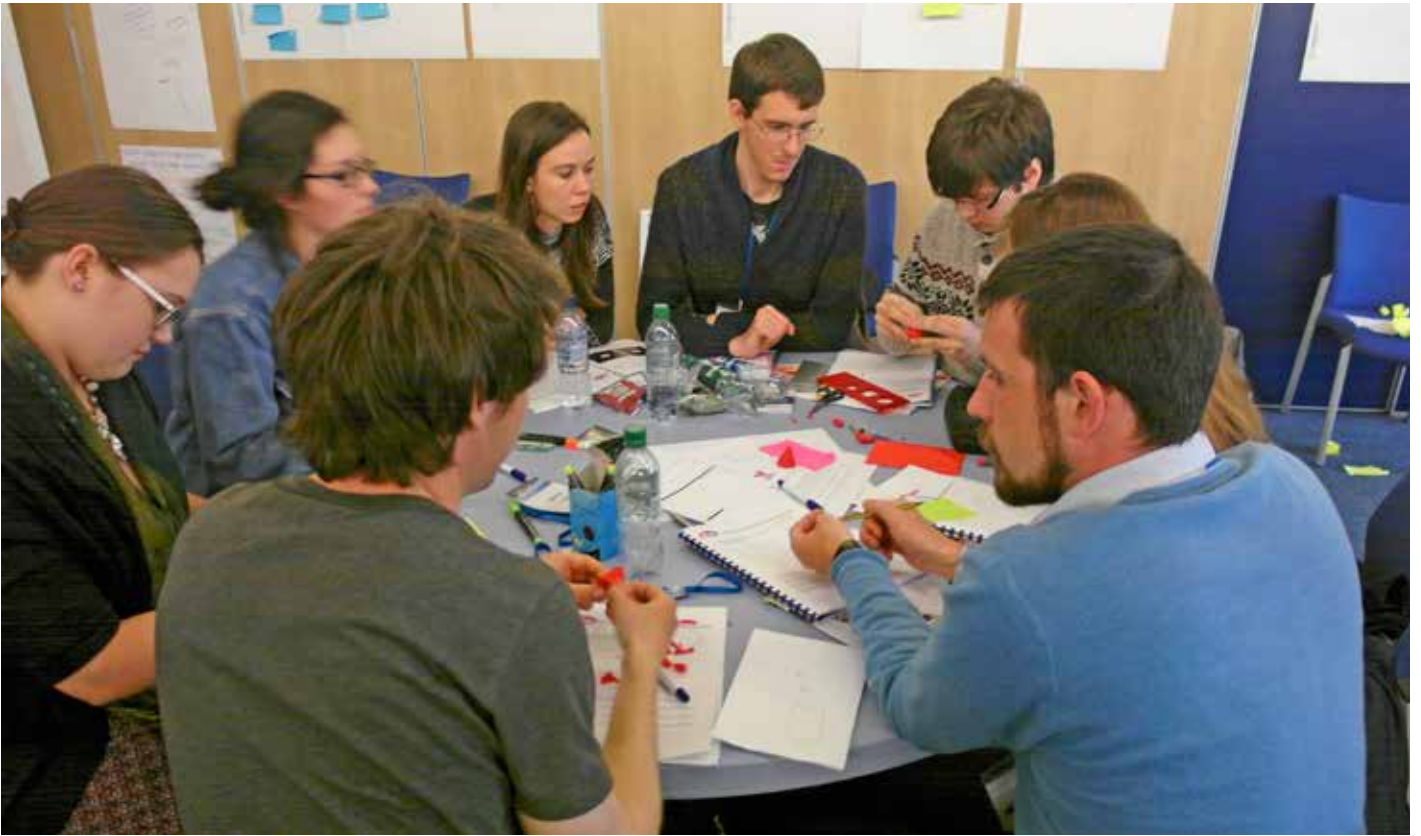*"I enjoyed the weekend and feel my confidence has grown."*

Laidlaw 2016 Intern

"This was an amazing event. It was exhausting and challenging. It took me out of my comfort zone but gently and in a welcoming way."

Laidlaw 2016 Intern

Community Involvement

As part of the interns' leadership programme, they were tasked with the design and delivery of a logistically complex event, requiring team-work, creativity and leadership. The challenge was to stage an academic fayre for 300 pupils from the local high school, Madras College. The interns delivered a presentation about the University experience, before inviting the school pupils to make their way around an interactive market place, with each academic school represented.

Towards the future

Lord Laidlaw has generously funded the Laidlaw Undergraduate Internship Programme in Research and Leadership for a further year, and applications are open for students who wish to apply for an internship for summer 2017. http://www.st-andrews.ac.uk/students/involve/laidlaw

"It has taught me the vital skill of reflection – useful for all walks of life"

Thomas Doherty,
Physics & Astronomy

"The Laidlaw programme has really cemented the idea that I want to pursue research"

Michael Grieve, English

"I grew more passionate and I know I want to go forward even though research can be scary and challenging"

Alice Zambini, Art History

'COULD I DO THAT?': Examining the ideological motivations, cultural conditioning & psychological processes that allow conflict personnel to commit atrocities in war.

Laidlaw Undergraduate Internship in Research and Leadership Programme 2016

Marnie Adamson
Supervised by Professor Karin Fierke, School of International Relations

Summary

There is naturally no one, or even two or three, isolated reasons why a human being may come to feel that murder, torture, rape and brutalisation are morally excusable. Rather, this project has discovered the complicated interplay between a mindset that obeys an authority, seeks to dominate and neglects individual responsibility and a wider ideology that justifies and legitimates violence against a perceived enemy, often who has been dehumanised and devalued in the wider culture. It offers a theoretical framework of potential motivations and processes, and two case studies: the War on Terror and former Yugoslavia.

OBEDIENCE in the WAR ON TERROR
- US Army Oath of Enlistment and military training manuals repeatedly stress "loyalty", "duty", "respect" and "obedience" as the necessary characteristics for successful soldiers.

OBEDIENCE in YUGOSLAVIA
- Serbian soldiers, police and militiamen sometimes coerced or blackmailed their neighbours and colleagues to commit murder and rape, telling them to "Rape, or be killed". (Stiglymayer, 1994)
- Victims of Serbian violence, however, report that the soldiers seemed to relish their brutality, motivated by ideology or revenge.

DEHUMANISATION in the WAR ON TERROR
- Terrorists described as anonymous 'they' or 'them', and reduced purely to their 'terrorist' identity. The result of this is that 'enemy combatants' can be treated without humanity.
- Motives of terrorists presented as illogical, denying their political voice or grievances.

What the existence of photographs of abuse at Abu Ghraib prison demonstrated was that the perpetrators felt there was nothing wrong with what they showed, that the Iraqi detainees *deserved* to be treated this way.

DEHUMANISATION in YUGOSLAVIA
- The language used by Serbian nationalists, academics, politicians and media towards Kosovo Albanians and Bosnian-Muslims served to remove their human qualities and to define them by their perceived danger: 'extremists', 'thugs'.

Lexis Used to Describe the 'Other' in Fifteen Bush Administration Speech-Acts, 2001-2004

Legend: Terrorists; Them/They/Their; Enemies; Threat; Named Enemy; Adversary; Tyrant; Extremist/Fanatic; Murderer/Killer; Men

IN-GROUP THINKING in the WAR ON TERROR
- In fifteen speech-acts by the Bush Administration between 2001 and 2004, words to describe an in-group ('us', 'we', 'our', 'Americans') could be found 705 times. In contrast, the most common designations for the enemy were 'terrorist' (who, of course, deserve no recognition: "we do not negotiate with terrorists") and the anonymous, isolating 'they/them/their' pronouns. George W. Bush's speechwriting also created a divisive binary between 'us' and 'them': "Either you are with us, or you are with the terrorists". (Bush, 2001)
- As 'othering' intensified over time, an entire religion, an entire race, and an entire culture, can come to be seen as the 'out-group', against whom violent behaviour is excused because of their supposed 'barbarity' and 'evil'.

IN-GROUP THINKING in YUGOSLAVIA
Slavic integral nationalism could lend itself to the formation of divergent group thinking. There was a broadening of the category of 'them' and a narrowing of the notion of 'us'. During the 1980s and the increasing tension in Kosovo, a Serbian view developed of Kosovo Albanians as *all Paracin murderers or Martinović rapists*.

IDEOLOGY in the WAR ON TERROR
- In the wake of 9/11, America *seemed* profoundly vulnerable and weak, pre-emptive counter-measures *seemed* necessary and desirable; 86% of respondents 'very or somewhat concerned' that America would suffer another attack. This is a massive public mandate. (Richardson, 2007)
- The use of the language of 'evil' moralises the War on Terror. If America's enemies are 'evil', discursive construction implies that America must be 'good', the 'innocent', and their actions against such 'evildoers' are simply the justice that 'evil' brings on itself.
- *"We have seen their kind before. They are the heirs of all the murderous ideologies of the 20th century"* (Bush, 2001). War on Terror compared to WWII and Islamic extremism is conflated with history's great villains, Adolf Hitler and National Socialism, whilst reminding the American people of US history of military strength and victory.

IDEOLOGY in YUGOSLAVIA
- A particular kind of virulent nationalism is found in former Yugoslavia: national identity as a kind of kinship, united by tradition and culture in a quasi-mystical bond with a natural right to territory and sovereignty.
- A culture of Serbian victimhood developed in the years preceding the outbreak of extraordinary violence. Serbian nationalist politicians and media appealed to recent events and historical memory of Ottoman and Croat genocide to form an image of the long-standing victimization of the Serb nation.

Arkan's Tigers

"The most dangerous identity is that of victim. Once we see ourselves as victims, we can clearly identify an enemy. Steeped in our own victimhood, we no longer feel bound by moral considerations in becoming perpetrators." (Mertas, 1999)

OBEDIENCE
Obedience is engineered to such an extent that it is no longer an internal moral code and self-sanctions that guide a soldier's actions, but a desire to fulfil the orders of his or her recognised authority

MORAL JUSTIFICATION
The process through which the morality of killing and extreme violence is "cognitively redefined" so that "it can be done free from self-censure" (Bandura, in Reich, 1990). Accomplished by:
- Redefining immoral behaviour as honorable ✤
- Displacing or diffusing responsibility ▲
- Minimizing negative and stressing positive outcomes □
- Reconstructing victims as deserving of punishment ✧

DEHUMANISATION
Creating or exacerbating moral, cultural, psychological or physical distance between the victim and the perpetrator, so that human qualities are obscured. The victim or victim group begin to be "placed outside the boundary within which moral values, rules, and considerations of fairness apply." (Waller, 2007)

IN-GROUP THINKING
The psychological construction of an 'in-group', whom we assume are similar to us and we treat more favourably, contrasted to an 'out-group', whom we assume are all similar to each other and whose differences to 'us' we accentuate. What follows is ethnocentrism, a sense of the superiority of 'our' group, and a growing sense that killing, or being willing to kill, members of another group is morally legitimate when it is for the protection of our group.

IDEOLOGY
For men and women to *willingly* carry out violence, they must feel that is is "legitimated by some higher purpose" (Hollander, 2008). Thus, political violence is often invoked as a response to the threat of danger and destruction, and soldiers become convinced that they commit atrocities in order to protect innocent people—their 'in-group'—from attack. A widely-held ideology, additionally, can make soldiers feel that their actions are supported by the public.

MILITARY TRAINING
A process of humiliation and endurance that breaks down new recruits and remakes them as aggressively masculine and heterosexual, committed to their unit and to the military institution, whose orders he or she follows without question.

WARTIME RAPE
Wartime rape can be an expression of victory and domination over the enemy.
The culture of aggressive, heterosexual masculinity of the military can forge a "deep-seated contempt for women" (Brownmiller, 1990). This view of the feminine (though not, necessarily, the female) leads to rape, in which the rapist is the masculine, heterosexual, dominant subject and the victim is the feminine, homosexual, weak object. Group rape or gang rape can act as a bonding exercise amongst troops and an affirmation, rarely found in wartime, of one's absolute power and victory.

ANONYMITY AND DEINDIVIDUATION
If unidentifiable to others, a soldier and his behaviour can become unidentifiable even to himself, and thus free from self-censure. Through deindividuation, the individual, detectable identity breaks down and a nameless group identity forms. People show an increased tendency toward violent and aggressive behavior in deindividuated conditions as they seem exempt from personal responsibility.

ESCALATING VIOLENCE
Soldiers are encourage to commit atrocities over and over again to prevent moral sanctions coming into effect and to render such behaviour 'normal'.

MORAL JUSTIFICATION in the WAR ON TERROR

- The war as a global, moral imperative, representing a threat to 'civilization' and 'civilized' nations the world over. ✤
- America's victimhood in 9/11 allows for exceptional behaviour without breaching America's fundamental identity of justness; it was 'they' forced our hand:
  - *"'We did not start this war. So understand, responsibility for every single casualty in this war, whether they're innocent Afghans or innocent Americans, rests at the feet of al-Qaeda and the Taliban."* (Donald Rumsfeld, in Jackson, 2005) ▲
- The distinctiveness of *this* threat to American national security, that necessitate 'new' ways to deal with the danger, 'new' values and 'new' rules. (Used as justification for torture and rendition) ✤
- War in the name of liberation and spreading Western, liberal culture. Numerous speech-acts refer to the human rights violations of the Afghan or Iraqi people, and the post-invasion religious freedom and women's rights. □

MORAL JUSTIFICATION in YUGOSLAVIA
- A 1986 Memorandum warned that "The Serbs in Croatia have never been before as jeopardised as they are today." (Mertas, 1999) ▲
- Serbs long believed they should govern Yugoslavia as a unitary polity, in reward for their history of sacrifice for the Slavic nations. ✤
- A re-working of just war theory; the extreme violence of Serbian forces was framed as part of war, and both sides were similarly brutal. ▲
- Radovan Karadžić warned that, "If Bosnia-Herzegovina declared its independence, it would not last a single day" (Naimark, 2001). Therefore, the ensuing violence was Bosnia's fault for ignoring his warning, and for wanting independence at all. □

Identification of 'American Values' in Fifteen Bush Administration Speech-Acts, 2001-2004

Values (y-axis): Tolerance, Equality, Peace, Liberty, Justice, Democracy, Freedom
x-axis: Number of Uses

MILITARY TRAINING in the WAR ON TERROR
- Before even enlisting, Western men and boys have been socialised through media and cultural norms to see a military career as a confirmation of manliness. To oneself and to others.
  - Popular veneration of military achievement in patriotic celebrations such as the Fourth of July, Memorial Day and Veterans Day.
- There are cultural expectations of what a soldier should be (strong, fearless, manly, dominant) and what it promises (honour, pride, admiration, power).
- Through institutional support and unconditional public sympathy, there was an implicit level of impunity and forgiveness for violence and killing.

MILITARY TRAINING in YUGOSLAVIA
- Yugoslav ideals of manhood contained a socialised character of hyper-masculinity and warrior culture.
- The military forces in former Yugoslavia were often militias, known for their excessive violence. It is important to stress, nonetheless, that ethnic cleansing was a policy initiated and supervised by the political elite.
- Serbian soldiers and militiamen felt an impunity, as the international community only ineffectively and half-heartedly acted to condemn their atrocities.

ANONYMITY in the WAR ON TERROR
US Armed Forces Training encourages the formation of closely-knit groups. The team or unit, in which a soldier loses his identity, is imperative for military success.

ANONYMITY in YUGOSLAVIA
"Nationalism is such a powerful and irrational totality that...the individual ceases to act as an individual, becoming, instead part of the masses" (Grandits and Promitzer, 2000). The feeling of operating within the powerful construct of Serbian national group, for the benefit and on the behalf of this national group, allows soldiers and militiamen to feel a sense of anonymity (as well as impunity) that allows for the moral disengagement from violence, rape and killing.

RAPE in YUGOSLAVIA
- Rape of non-Serbs was used as a devastatingly effective weapon in the ethnic cleansing and genocide of Yugoslav territory in preparation for Serbian *lebensraum*, in order "to intimidate, humiliate and degrade [the victim] and others affected by her suffering." (Naimark, 2001)
- In Serbian interpretations of gender and nationality, Bosnian-Muslims were lapsed Serbs. Within this schema, Bosnian-Muslim women forcibly impregnated and forced to carry to term would bear ethnically Serbian children to rejuvenate the nation.

EVOLUTIONARY ROOTS OF VIOLENCE
Both chimpanzees and humans engage in 'coalitionary violence', otherwise unique in the animal kingdom, whereby groups hunt for vulnerable individuals to sadistically attack. It is "at least incriminating" (Singer, in Tzabar, 2015) that man shares such distinctive behaviour with our closest evolutionary ancestors. However, there is little historical evidence of systematic violence before c.8,000 years ago, after the switch to farming societies that might have facilitated 'war' as we know it.

POST-TRAUMATIC STRESS DISORDER
PTSD, brought on by a breakdown in one's identity caused by engaging in behavior (killing, raping, violence, torture) one would not have believe oneself capable of, causes intrusive re-experiencing, avoidance, emotional numbing and hyperarousal. Multiple studies have found that those suffering from PTSD exhibit higher levels of aggression and anger, often engaging in domestic violence, alcohol abuse and risky behavior. A soldier suffering from PTSD lives in a world of perpetual threat and danger, and is on edge always to respond aggressively or violently in ways that have saved his life before, that to the traumatised mind are reasonable, justified and necessary. Violence in conflict could, therefore, be an expression of PTSD.

EPIGENETICS
Epigenetics, whereby changes in one's genes brought about by environmental causes can be passed on genetically to make offspring predisposed to certain traits. Of particular interest in epigenetic modification is DNA methylation, which regulates when and where a gene is active, which correlates with depression or stress-related disorders. It is possible, therefore, to be genetically predisposed to adverse reactions to stress and trauma.

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Iberian 'Long Sixties'? Youth Culture and Gender in Spain and Portugal, 1958-1980

Maria Almeida Reis • Dr. Nikolaos Papadogiannis • School of History
Laidlaw Undergraduate Internship in Research and Leadership Programme 2016

Summary & Objectives

Historian Arthur Marwick argues that a "cultural revolution" occurred during the "Long Sixties" in the United States, Britain, France, and Italy. Marwick claims that from 1958 to 1974, these four countries experienced the disintegration of traditional values of morality and discipline, especially with the rise of rebellious youth cultures and shifts in gender expectations and sexual behaviour.[1]

The main objective of this project was to explore whether Marwick's model of a "cultural revolution" can also be applied to the Iberian Peninsula during this period. Unlike the countries chosen by Marwick, Spain and Portugal were not under liberal democratic regimes during the "Long Sixties." Instead, these two countries were experiencing the final years of the conservative and authoritarian dictatorships of Francisco Franco and Antonio de Oliveira Salazar, as well as periods of transition from dictatorship to democracy.

Left: Article published in 1963 by Spanish magazine *Illustracion Femenina* on the problems associated with women in the workforce.[7]
Right: Advertisement published in 1964 by Spanish magazine *Maria Luisa.*[8]

Main Findings

I conducted the majority of my research in the National Libraries in Madrid and in Lisbon. By looking at social surveys and women's magazines, I was able to gauge the extent to which culturally liberal ideas infiltrated these societies. A survey conducted in 1980 noted the rising influence of atheist beliefs among young Spaniards, with 9 in 10 of those surveyed citing pre-marital sexual relations as completely permissible.[2] By 1978, the magazine *Ama* had published articles on the importance of female contraception and the increased popular acceptance of divorce. In the same year, however, *Ama* published a feature where male interviewees described the ideal woman as both feminine and dependent on men.[3]

In Portugal, television served as the dominant medium to spread the latest fashion and to play Rock & Roll hits. The 1969 protests in the University of Coimbra showed the rise of a rebellious youth culture.[4] Nevertheless, though the publications *Modas e Bordados* and *Eva* were led by women associated with the opposition, these magazines rarely questioned traditional gender norms, often promoting domesticity and female dependency.[5] Similarly, a 1982 survey showed that the Portuguese youth maintained largely conservative values in regards to family and gender, even after the Carnation Revolution in 1974.[6]

Conclusions

Despite the growing influence of liberal ideologies on the Iberian Peninsula during this period, the term "revolution" cannot accurately be applied to describe the cultural changes occurring in Spain and Portugal. Largely due to their unique political situations, a truly revolutionary socio-cultural opening was limited by decades of conservative governance in both countries[9], although changes were certainly more apparent in Spain than in Portugal. In the Portuguese case, political revolution was not accompanied by a socio-cultural one. Though popular attitudes towards sex became increasingly more relaxed, cultural expectations of gender roles remained largely conservative, even among the younger generations.

By the end of my project, I began to question Marwick's original model itself. It can certainly be argued that the liberal democratic countries chosen by Marwick did not experience "cultural revolutions", and that social change was also limited in the West. Further research should be conducted on the impact of the "Long Sixties" in the Iberian Peninsula, specifically in Portugal where there is significantly less secondary analysis on the topic.

Citations & Acknowledgments

[1]Arthur Marwick, *The Sixties: Cultural Revolution in Britain, France, Italy, and the United States* (Oxford, 1998), p. 3
[2] Instituto Superior de Asesores Familiares. *La juventud en la familia y en la sociedad* (Madrid, 1980), p. 190
[3] *Ama,* 446, July 1978 [4]Rui Bebiano, *O Poder da Imaginação: Juventude, Rebeldia, e Resistência nos Anos 60* (Coimbra, 2003), p. 103
[5] *Ibid.*, p. 87 [6]Maria Isabel Barrero, *O Direito ao Presente: Um Estudo Sobre a Juventude Portuguesa: Instituto de Estudos Para O Desenvolvimento* (Lisbon, 1988), p. 42 [7]*Illustracion Femenina,* 386, March 1963 [8]*Maria Luisa,* 3, January 1964 [9]Kostis Kornetis, Eirini Kotsovili, Nikolaos Papadogiannis, "Introduction" in *Consumption and Gender in Southern Europe Since the Long 1960s* (London, 2016), p. 7

TRANSITION, TRANSGRESSION AND TRANSCENDENCE:
GENDER AND THE PROLIFERATION OF POWER IN THE ANCIENT NEAR EAST

This project aimed to explore, using two examples from ancient Egypt and one from ancient Judah, how ancient Near Eastern rulers and deities' deviations from binary sex categories interacted with their claims to political and religious supremacy. This project was primarily focused on the artistic and literary depictions of two pharaohs from Egypt's powerful Eighteenth Dynasty, the female-king Hatshepsut (c. 1478/72 BCE – 1458 BCE) and the "heretic" Akhenaten (c. 1353 BCE – 1334 BCE), but was also intended to consider how gender transgression in Egypt relates to the presentation of Yahweh, the god of the Hebrew Bible's, transcendence of binary sex categories in the Book of Isaiah.

Pharaoh Hatshepsut, a "female" king depicted with a "male" beard <http://www.biografica.info/fotos/HAT.png>

Although scholars have traditionally understood Hatshepsut's assumption of the full masculine regalia of kingship as an attempt by the pharaoh to disguise her biological sex, her gender expression is better understood as dual-gendered. Whilst some statues of the pharaoh combine gender attributes, others portray maleness despite retaining feminine gendered-language on their accompanying inscriptions. Lana Troy argues that "kingship was an androgynous construct in which it was possible to identify both male and female models". Hatshepsut's movement between genders contributed to the consolidation of her position because she was able to embody a wider scope of kingly qualities in her own person; she did not require a consort to fulfil the feminine and was thus self-reliant. The existence of Hatshepsut's feminine "Ma'at name", which associated the pharaoh with the goddess of order and justice with unsurpassed directness, conclusively demonstrates how Hatshepsut's femaleness benefited her authority when performed selectively rather than necessarily.

Scholars have traditionally interpreted Akhenaten's absent genitals, wide hips, rounded abdomen and breasts (as identified in the "sexless" colossus") as consciously reflective of the androgyny found in his self-sufficient creator god; the Aten, addressed as "the mother and father of mankind" in the *Great Hymn to the Aten*. In 1989, Edna Russman described the "curious, uncomfortable mixture of repulsion and attraction" many feel when gazing upon Akhenaten's "charismatic… distorted… monstrous" iconography, but the arguments in favour of identifying androgynous or hermaphroditic characteristics in the body of Akhenaten are inconclusive. The Amarna Period certainly produced a new image of kingship, but it may be that statues such as the "sexless" colossus depicted Akhenaten's queen, Nefertiti, rather than the king himself or else the king in the guise of the god of the underworld, Osiris, in a vegetative state between "complete" (male) and "incomplete" (non-male) bodies. Nevertheless, whilst debates amongst Egyptologists regarding the exact identification of the "sexless" colossus may challenge the interpretation that Akhenaten's public body bore ancient witness to gender nonconformity, the alternative possibilities highlight either the central importance of queenship in the Amarna Period (as Nefertiti would thus have been depicted wearing the kingly beard) or otherwise the prominence of the cult of a sexually-disabled deity. Regardless, such statuary still testifies to the diverse, and often surprising, range of gender expression utilised in ancient Egyptian artistic conceptions of political and religious power.

Hatshepsut and Akhenaten are often focused on as important aberrations from the norm when Gender Studies and Egyptology intersect. However, depictions of the deities Hapi (who is frequently shown with a stomach indicating pregnancy as a result of his association with the fertile Nile), Osiris (whose central role in beliefs about resurrection caused deceased queens to exhibit post-mortem gender fluidity in their attempts to identify with him) and the goddess Mut (who was sometimes depicted with three heads and a penis) suggest that these pharaohs' "transitions" may not have been as transgressive as is often imagined. Hatshepsut and Akhenaten (or perhaps Nefertiti) do not appear to be contained by the gender binary in their iconography because they presented themselves not as humans but as gods. The pharaohs did not transgress binary sex distinctions, they transcended them. As in ancient Egypt, in ancient Judah it seems that descriptions of deities exerting claims to new political autonomy, as Yahweh does in his promise to deliver his people from foreign exile after a period of silence in Isa 42:14, incorporated androgyny. Isaiah 42:14, 46:3-4, 49:5;15 and 66:13 contain examples of "feminine god-language" that associate Yahweh with birthing, motherhood and the womb. Biblical scholars have debated the extent to which passages such as "now I will cry out like a woman in labour, I will gasp and pant" (Isa 42:14) may testify to the deity's femininity. However, such motifs are likely better understood as an essential aspect of the writer's establishment of Yahweh as supreme amongst all deities; omnipotent gods transcend every limitation; they are not and cannot be defined by the gender binary.

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Pharaoh Akhenaten, depicted with a swollen abdomen and wide hips <http://revelationnow.net/wp-content/gallery/akhenaten/akhenaten_hips.fw_.png>

ENCOUNTERS WITH MEMORY:
Remembering the slave trade in Bristol, c. 1945-2015

University of St Andrews

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INTRODUCTION

Bristol's past is contested. As a central traumatic event in Bristol's history, groups who commemorated the slave trade often came into conflict with local authorities over its representation. From the 1940s until the 1990s, the official memory of the slave trade was characterised by silence from the local council. The relationship of memory and politics is hence at the heart of my research: how, why, and when was the memory of the slave trade imagined in Bristol?

1990s: 'EXPLOSION OF MEMORY'

1) Festival of the Sea controversy:

In 1996, the city held a series of events which celebrated Bristol's maritime history but did not seem to recognise the slave trade as a central part of it.[1] This caused outrage among many residents who felt that the local authorities had excluded the Afro-Caribbean community from Bristol's past, as exemplified by Tony Forbes's painting pictured right.

It was the weekend that Bristol broke my heart.[4]

Against this background, the local authorities began a concerted effort in 1997 to incorporate the slave trade into a collective memory which would promote social cohesion through an inclusive concept of heritage. The Bristol Slave Trade Action Group (BSTAG) was created to this end to initiate commemorative projects aimed at the education of the slave trade in partnership with ethnic communities in Bristol.

2) Labour and the discourse of heritage:

By the 1990s, questions of multiculturalism had entered mainstream discourse as a central political concern and prompted the newly elected Labour Party of 1997 to consider the meaning of British identity through a reconceptualization of 'heritage'.[2] This brought with it a willingness to invest in public history projects with the ultimate objective of creating a common identity through a common history.[3]

Fig. 1

CONTESTED MEMORY

Despite official silence prior to the 1990s, the slave trade was important to the collective memory of Bristol's Afro-Caribbean community, which developed following the post-war Commonwealth migration to Britain in the 1950s and 1960s.

Although the first-wave of Caribbean migrants were not a homogenous group – most did not identify as 'Caribbean' but as Jamaican, Dominican, etc. – it can be argued that a shared identity developed over the course of the 1960s and 1970s, perhaps due to the concentration of settlers to the St. Paul's area. Pronounced socioeconomic inequality in the area created a feeling of malaise among the community, culminating in the St. Paul's Riot of 1980.[8] Many Bristolians connected this contemporary feeling of marginalisation with the experience of African slaves through reggae music, which acted as a vehicle of political expression.[9] In this way, this group could contest the official silence over Bristol's past.

Over on Whiteladies Road, the spirit touch my soul
On top of Blackboy Hill, silently I make my wills
...
Read it in your history books
Scipio Africanus, Scipio Africanus.[10][11]

(Scipio Africanus refers to a famous slave buried in Redland, Bristol)

REIMAGINING THE PAST

Bristol's Slave Trade Trail (1998)

Created in 1998, the trail offers a walking tour of many sites linked to the slave trade, such as the Georgian House, Edward Colston's statue, and Queen's square.

The trail allows participants to take on an active role in the performance of history by mapping out a path which connects common sites to the slave trade.[5] In this way, the trail reconfigures pre-existing sites of memory (*lieux de memoire*) to an alternative representation of the past.

Bristol, as England's second port, grew wealthy ... from a combination of the slave trade and the trade in slave-produced commodities
...
What of the African people, whose labour underpinned the whole system?[6]
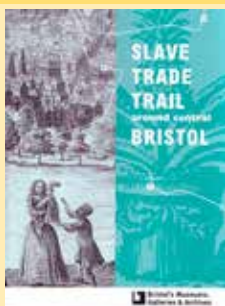
Fig. 2

'Transatlantic Slave Trade Gallery' in the Industrial Museum (2000)

Created in 2000, the gallery was a replacement to the successful 1999 exhibit, 'A Respectable Trade?'. The exhibit intended to integrate the contested representations of Bristol's past into a single collective memory that could be shared by the majority and minority.[7]

SUMMARY

- Before 1996, Bristol's local authorities were silent over the slave trade. This was contested by the Afro-Caribbean community, who expressed an alternative vision of Bristol's past.
- The controversy over the Festival of the Sea and Labour's promotion of social cohesion through heritage encouraged a shift in Bristol's memory culture in 1996/7.
- The shift in official policy allowed local authorities to construct a collective memory of Bristol's past that tried to integrate the history of the minority and majority.

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(8) Christine Chivalon, 'Collective Memory in Bristol and the Test of Slavery', *Social and Cultural Geography* 2 (2001), p. 6.
(9) Madge Dresser and Peter Fleming, *Bristol: Ethnic minorities and the city 1000-2001* (London, 2007), pp. 158-159.
(10) Black Roots, 'Bristol Rock'
(11) NB: Whiteladies Road and Blackboy Hill are not historically related to the slave trade but it is interesting that they are represented as such by the author of the song.
(12) Madge Dresser, UoB IAS Slavery: Legacies and Remembrance, 26 June 2014.

Fig. 1: Tony Forbes, *Sold Down the River*, (BBC Museums, 2003).
Fig. 2: Madge Dresser, Caletta Jordan, and Doreen Taylor, *Slave Trade Trail around Central Bristol*, (Bristol: Bristol Museum and Art Gallery, 1998).

Royal Court Jerwood Theatre Upstairs, 1995 – 2016
(or, how 85 seats changed British Theatre)

Blasted (Sarah Kane), 1995

Sarah Kane's debut play *Blasted* occupies a central space in any narrative of British Theatre in the 1990s. The tabloid furore about the extreme violence, homosexual rape, and cannibalism in the play – particularly in light of it being written by a twenty four year old woman – propelled the theatre towards infamy and public scrutiny. Sierz and Rebellato made much of *Blasted* as a central text of the 'in-yer-face' theatre movement. Kane's play reaffirmed the theatre's position as a boundary pushing, epoch defining space, one ready to challenge and provoke its audiences.

Soldier: You never killed
Ian: Not like that
Soldier: Not. Like. That
Ian: I'm not a torturer
Soldier: You're close to them, gun to head. Tie them up, tell them what you're going to do to them, make them wait for it, then…what?
Ian: Shoot them.
Soldier: You haven't got a clue.
Ian: What then?
Soldier: You never fucked a man before you killed him?
Ian: No.
Soldier: Or after?
Ian: Course not.
Soldier: Why not?
Ian: What for, I'm not queer.
Soldier: Col, they buggered her. Cut her throat. Hacked her ears and nose off.

Kane, S. *Complete Plays* (London: Methuen, 2001), p.33 - 34

Shopping and Fucking (Mark Ravenhill), 1996

Following closely behind *Blasted*, with a similarly shocking - to the tabloid press - emphasis on the relationship between violence, sex, and society, Ravenhill's *Shopping and Fucking* is often cited as a text that 'defined' the Court in the 1990s (Paul Taylor). The characters' combination of nihilism and apathetic despair sit alongside Ravenhill's caustic humour, leading to a play with odd shifts of tone. Max Stafford-Clark's staging, as seen on a recording held by the V & A Theatre Archive, was uncompromising, actively showing the audience scenes of drug and sexual abuse.

Gary: What do you want?
Mark: I don't know yet.
Gary: You must want something. Everybody's got something.
Mark: I used to know what I felt. I traded. I made money. Tic Tac. And when I made money I was happy. When I lost money I was unhappy. Then things got complicated. But for so many years everything I've felt has been … chemically induced. I mean, everything you feel you wonder … maybe it's just the …
Gary: The smack.
[…]
Mark: Right. I mean, are there any feelings left, you know?
The coins clatter.
I want to find out, want to know if there are any feelings left.

Ravenhill, M. *Plays 1* (London: Methuen, 2001), p.33 - 34

The Sugar Syndrome (Lucy Prebble), 2003

Lucy Prebble, who later went on to win the Critics' Circle Award for Best Play for *The Effect*, made her debut with *The Sugar Syndrome*, exploring a relationship between Dani, a seventeen year old girl disguising herself as an eleven year old boy, and Tim, a man in his thirties who believes he is talking to an eleven year old boy online. Much like many of the plays at the Court, Prebble takes traditionally taboo themes and puts them centre stage. The support offered by the Court's dramaturgy department to a debut writer were central to the play, confirming the Court as a theatre where the focus is on new writing.

Dani (laughing) One time, the path out the back of school. Some bloke had left a trail of passport photos of his genitals. With a hard on, all down the path to the station. It was hilarious.
Tim: No!
Dani: Straight up. It was just the thought of this bloke paying, like five quid, and clambering into the photo booth with his trousers round his ankles. Tim Adjusting the stool height?!
Dani Exactly. And cutting them up and then leaving a trail! We picked them up cos, you know, we didn't want the little girls finding them.
Tim Did you tell anyone?

Prebble, L., *The Sugar Syndrome* (London: Methuen, 2005), p.49 - 50

Constellations (Nick Payne), 2012

Taking quantum multiverse physics theorems and applying them to Upstairs space: the follow-up to a hugely successful play, the 2010 odd starting point for a play. However the 2012 production of *Constellations* confirmed the theatre as a new writing powerhouse, in spite of Roy Williams' statement in 2011 that the Court had stopped 'telling stories'. Filling the Upstairs space with hundreds of white balloons, *Constellations* provided a platform to Payne, an early career writer. The West End and Broadway transfers are indicative of the importance, both financially and artistically, of *Constellations* to the Court.

Roland: Where have you been?
Marianne: Work
Roland: I sent you a text.
Marianne: I know.
Roland: You've not texted me back?
Marianne: I know.
Roland: Just stop what you are doing and come here now.
Marianne: What?
Roland: What?
Marianne: It means that I know you sent me a text.
Roland: I didn't know where you were.
Marianne: Why are you being so tetchy? I was at work and I missed the seven thirty-seven and then the eight-oh-four didn't turn up. What's wrong, what's the matter?
Roland: Mary I'm really sorry but I had sex with Alison O'Connor Tuesday the week before last.

Payne, N, *Constellations* (London: Faber & Faber, 2012), p. 26 - 27

The River (Jez Butterworth), 2012

The River is something of an anomaly within the context of the Upstairs space: the inventive staging and use of language are in keeping with an 'Upstairs tradition'. Speaking to the main house of a theatre rather than a 85 seat studio theatre, However the script and story of *The River* demands an intimate space and so the Court staged it Upstairs. Speaking to the Court's General Manager, she emphasised the centrality of the playwright to their productions: so, if Butterworth's play demanded a small space that is where it would go, regardless of financial imperatives otherwise.

The Woman: You are missing the most incredible thing.
The Man: Where's it gone? It was right here. Here in this drawer.
The Woman: Where's it gone?
The Woman: Just stop
The Man: What?
The Woman: What?
The Woman: Now. Right Now. Come over here.
The Man: Oh, I've seen it.
Beat
The Woman: What?
The Man: I've seen it before.
The Woman: It's never happened before.
The Woman: Yes it has.
The Man: No it isn't.
Not like this.
The Man: Just like that.
They're all the same.
The Woman: No two sunsets are the same.

Butterworth, J. *The River* (London: Nick Hern Books, 2012), p. 6 - 7

Human Animals (Stef Smith), 2016

The current Upstairs production - and final play of the project - marks the Royal Court debut of Stef Smith. The inventive staging and use of language are in keeping with an 'Upstairs tradition'. Speaking to the productions director, Hamish Pirie, drew attention to the transformation of the Upstairs space into a recreation of a fish tank and the malleability of the space. The importance of the writer to Royal Court productions - as mentioned by every secondary source on the Court - was emphasised on conversation with the director, confirming the playwright as the central figure to the Court.

Jamie: This. This is what we will lose. Look out the window, this is what we will lose. It's beautiful, Lisa. It's beautiful and we'll lose it. It will all die under our watch.
And I want to make sure that isn't so.
Lisa: And I want normal. Just normal, nothing more. I'd never had normal before you – never had it. And I know that my life won't save the world, my life would be filled with any grand gestures but I think that's okay. Because this was enough for me. You were enough for me. But I am clearly not enough for you.
Jamie: I love you, Lisa. I love you so much I ache but this is bigger than us. It's bigger than two people trying to/

Smith, S. *Human Animals* (London: Nick Hern Books, 2016), p.77

ROYAL COURT

Transactions of the Royal Society of Edinburgh

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Undergraduate Internship in Research and Leadership Programme 2016

What are the Transactions?

Transactions is the journal of the Royal Society of Edinburgh, established in its very first meeting in 1783. Like other learned societies across the world, the Royal Society of Edinburgh printed the Transactions as a way of making the papers shared within Society meetings available to an international audience. The growth of journals such as Transactions, therefore, revolutionised the way scientific knowledge was disseminated from the Enlightenment onwards.

Sir Walter Scott, FRSE, 1771-1831
Image: https://commons.wikimedia.org/wiki/File:Walter_Scott_-_Project_Gutenberg_eText_18396.jpg

James Clerk Maxwell, FRSE, 1831-1879
Image: https://commons.wikimedia.org/wiki/File:James_Clerk_Maxwell_profile.jpg

James David Forbes, FRSE, 1809-1868
Image: https://en.wikipedia.org/wiki/James_David_Forbes#/media/File:James_David_Forbes.png

Sir David Brewster, FRSE, 1781-1868
Image: https://commons.wikimedia.org/wiki/File:Sir_David_Brewster_by_Sir_John_Watson-Gordon.jpg

Aims:

1. Examine the editorial practices of the Transactions in as much detail as possible. Of particular interest would be the way in which the Edinburgh journal was organised in comparison to its equivalent at the Royal Society in London.
2. Understand the ways in which the Royal Society of Edinburgh funded and supported the journal, i.e. to what extent did the Society wish to be associated with the Transactions?

Research:

The research was carried out in both the archives of the Royal Society of Edinburgh and the National Library of Scotland. It mostly involved careful examination of the Society's minute books and personal correspondence that covered the period between the end of the eighteenth century and the beginning of the twentieth century, and which allowed me to piece together the history of the journal. Due to the sheer volume of material available in the archives, it was necessary to be highly selective with the material I was working with.

Findings:

1. From the very outset of the Society, its members stressed the importance of publishing an annual Transactions – so much so that it appears in the Society's list of founding rules. Consequently, **the Society has always believed having a publication under its name to be key to its existence**.
2. Throughout its existence, the Royal Society of Edinburgh largely emphasises **exchanging its Transactions** for the publications of other societies, **rather than selling them for profit**.
3. Like the Royal Society in London, the Royal Society of Edinburgh adopted a refereeing procedure for papers in the 1830s. However, prior to this, it already had a peer-review system in place, and the adoption of referees in the 1830s was simply a formalisation of this process. **This is unique to Edinburgh, as the practise of specialists giving feedback on papers did not appear in London until the 1830s.**

Mad, drunk, and diseased, or simply in love?

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I) Introduction

My project is a cross-cultural comparison of imagery used in love poetry spanning from East to West, and from 1300 BC to the present day. It also examined how each image is used, why, and whether this usage is pertinent solely to its cultural context, or if it is a universal, apolitical and acultural usage.

II) Aims

- To investigate the similarities and differences in the use of motifs by each author.
- To explore the cultural influences upon each image.
- To examine if any motifs were universal, despite the different cultural influences.

III) Methods

1. Selection of works
2. Translation
3. Literary and cultural analysis
4. Compilation
5. Comparison of images
6. Analysis

Figure 1: Attic kylix from 490BC, depicting a man and hetaira reclining during a symposium.

IV) Results

- **Madness**:
  - Frenzied
  - Irrational in thought and behaviour

- **Disease:**
  - Idea of the physical consummation of the body
  - Description of love, as if a disease, with various symptoms
  - Specifically described as a disease, or implied through references to cures

- **Drunkenness:**
  - State of inebriation is equivalent to state of being possessed by love – i.e. loss of control; in Sufism this is one path to love of God
  - Love and wine are both intoxicating, addictive and can alter our judgement

- **Light/sight:**
  - Sight as a means of capture, or control; if unrequited this can be destructive
  - Symbol of love and life

Figure 3: Attic kylix from Vulci, dated c. 480 8C, depicting the courtship between a man and woman.

- **Fire:**
  - Indication of suffering
  - Represents the growth or intensification of love
  - Presence is a symbol of love or friendship
  - Suggestion of a burning sexual desire

- **Destruction/death:**
  - Illustrates the potency of love: lovers would die for it, or die to escape it
  - Destruction of their previous reputation, freedom and life, before the presence of love
  - Idea of love as torturous
  - Verbal reinforcement, e.g. 'depereo' translates as "to be desperately in love with, dying with love for; to die, to go to ruin",

- **War:**
  - Personification of Love, either as an ally or enemy
  - War between lovers
  - Use of military vocabulary or themes
  - Idea of capture

- **Slavery:**
  - Notion of taming another, e.g. analogy of the yoking of a bull
  - Idea of suffering
  - Willing servitude
  - Freedom found through bonds of love

Figure 2: Attic kylix depicting a couple kissing (dated 5th century BCE)

V) Conclusion

These motifs used in love poetry have transcended the boundaries of time and culture, as is manifest from their prevalence in all areas of my study. However, the meaning or significance of each idea is not wholly consistent throughout, for each motif, because of cultural context. For example, madness and disease are universal, and defy the boundaries of culture and politics because everyone can relate to them. However, slavery and war, which are especially pertinent to the Roman elegists, interestingly are not as prevalent to the Ancient Greeks and Egyptians, despite a similar prominence of slavery and war.

VI) Further Research

- Inclusion of other poets, e.g. Gallus, Horace, Meleager
- Inclusion of representations of love in other genres of literature, eg epic, tragedy, fiction
- Inclusion of different cultures and time periods
- Examination of other themes, e.g. nature of love, divine aspect, magic
- Examination from different approaches or perspectives

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Figure 2: https://en.wikipedia.org/wiki/Pederasty_in_ancient_Greece
Figure 3: https://uk.pinterest.com/pin/354799276868804051/

The Role of Women in the Church
How do Church Leaders Interpret the Bible?

By Joel Butcher. Supervised by Dr David Moffitt.
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The Rationale

I grew up in churches where women could do everything that men could do. Having studied Theology and Biblical Studies, I have become more aware that some Christians think differently. I wanted to find out why there is such a diversity of opinion on the role of women in the church.

Having spent the first half of the project reading scholarly and more popular arguments surrounding the subject, I then interviewed 25 church leaders to find out their views are on this issue. Why do they think what they think? How do they interpret what the Bible says about the role of women? How does this understanding impact their congregations?

The Interviews

I interviewed 25 church leaders, from a variety of Protestant* denominations, in St Andrews but also in the Cheddar Valley in Somerset. I interviewed 10 women and 15 men.** I asked several questions, from direct questions about the role of women in the church to questions about the authority of the Bible, the importance of respecting others' opinions and the relation of church to culture.

*I did not interview any leaders from the Catholic Church, in order to keep my study as focused as possible. That said, the stance of the Catholic Church differs somewhat in its argumentation from the Protestant Church.

**It was quite difficult to find many female church leaders to interview!

Church Leaders on the Role of the Women in the Church

There is No Gender-Based Male Leadership Role in Marriage

Women Can Be in the Highest Positions* of Church Leadership

Women Can Preach** in Church to Men and Women

Legend: Unsure, No, Yes
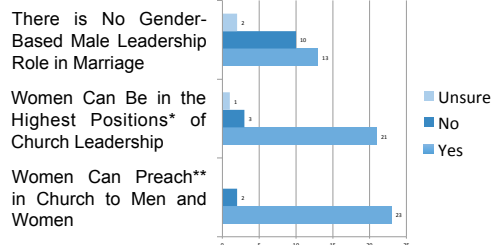
*For example, they can be elders of a church, or senior pastors.
**Defining preaching here as Revd. Paul Clarke did in his interview: "a sustained monologue to the gathered congregation."

Entering the Narrative

When it comes to this topic, I believe it's so important to learn to enter the narrative in which someone else is living in. In other words, we need to understand why people think the way that they do, even if they might be wrong. For me, the challenge of good research is to *make the incomprehensible comprehensible*. In terms of this research, it's necessary to find out about the lives of the church leaders, their views on the authority of scripture and their views on culture etc, in order to understand why they think what they think about the role of women in the church.

Interview Findings

As the graph (above right) shows, the church leaders were almost all in favour of women preaching, with almost as much of a consensus on women being in positions of church leadership. However, there was a real split on whether the husband has some sort of leadership role in a marriage between a husband and wife. As Dr Steve Holmes argues, this is because it is the most exegetically (exegetical = critical interpretation of a text) plausible of the three statements. In other words, he believes it's more understandable to make a biblical argument for a male leadership role in a marriage than for women not preaching in church or not being in the highest positions of church leadership.

" It completely baffles me that some churches still struggle with this. How dare they? "
- Robin Waterston

Robin Waterston is the Co-clerk of East Scotland Area Meeting for the Religious Society of Friends (Quakers).

When I asked if he would be willing to participate in an interview he responded: "I don't think there would be much benefit in a meeting between us- I would only be able to express incomprehension and a degree of outrage."

For some interviewees, the debate over the role of women in church is a thing of the past. In the Church of Scotland, there have been no restrictions on the role of women in the church since 1968.

For Julie Torrance, on staff at Holy Trinity Church St Andrews, it's never really been an issue: "I guess it's never occurred to me that I shouldn't be (preaching) because I was a woman."

Some women, like one interviewee who is involved in church leadership in St Andrews, have had more varied experiences. Around 20 years ago, having led the Sunday morning service a couple of times, she was asked to stop by the minister after two people had complained. "Was I doing it badly?" she asked. "No no, you were taking authority away from the men."

In some churches, women cannot preach on a Sunday morning, nor can they be elders in the church. The leaders of these churches see these decisions as faithful interpretation of Scripture. Contrary to some critics, they do believe in women's ministry, but they just see that there are a couple of prohibitions. They prefer to define positively what women can do in the churches, instead of starting with what they can't do.

" I preached and the roof didn't fall down. "
- Dr. Elizabeth Shively

Currently a New Testament lecturer at St Andrews, Dr Shively was the first woman to preach at Park Street Church, a large Conservative Congregational church in Boston with an average Sunday attendance of 2000 people.

For some church leaders, they have had many positive experiences of women preaching and leading in churches. This can influence the way that they read the Bible.

This is the case for Al Cuthbert, one of the pastors at St Andrews Baptist Church: "I come to the text already fairly convinced experientially and practically that women can be very good leaders. And men can be horrible leaders."

For those interviewees who do not think women should preach in church nor have overall authority in church, they do not dispute that women can be very good leaders. A woman's gifts should be encouraged. However, there are certain restrictions that they believe must be applied in order to be faithful to the Bible.

Key Bible Passages

As discussed following the Rollinson quote (above right), for Evangelical Protestants, one's interpretation of the Bible has a major impact on one's stance on the role of women in the church. Here are some of the key passages that are discussed:

- 1 Timothy 2:8-15 & 1 Corinthians 11:34-35. Do these explicitly show that women shouldn't preach in church?
- Genesis 1-3. Is female submission part of God's intention for creation, or a result of the Fall?
- Ephesians 5:21-33. Does this show that the husband has a leadership role in a marriage?
- Galatians 3:28. What is the impact of Jesus' life, death and resurrection on the role of women in the church?
- Romans 16:7, Acts 16:14-15; 18:26. Are these women leaders in the early church? If so, how does this affect church practice today?

" It's all to do with hermeneutics, to do with how one reads scripture. "
- Revd. Andrew Rollinson

Hermeneutics is the "the interpretation of scriptural texts... esp. with regard to theory or methodology."[1]

By saying this, Revd. Rollinson is saying that the way you approach the Bible is one of the biggest factors in what you believe about the role of women in the church.

He explains, "everyone comes to scripture with coloured spectacles and we all read scripture though these coloured spectacles. It's learning how to try and read scripture in as objective a way as possible, knowing that we all come from a non-neutral point of view."

For most interviewees, the Bible is the most important factor in making decisions about the role of the women in the church. For others, the tradition of the church plays an almost equal role. For some, society's understanding of gender roles should influence the church's stance on the role of women in the church.

" At what point does possession of a penis become a problem? "
- Anonymous Interviewee

Many interviewees asked a similar question of those who don't think that women should preach, namely, if women cannot preach in church then why are women allowed to teach male and female children and teenagers in Sunday School?

In response, those who don't think women should preach in church argue that is it an issue of obedience to the teaching of the Bible. They see a clear prohibition in the Bible to women preaching in front of the gathered congregation, but not to women teaching children.

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1. *Oxford English Dictionary*, s.v. "hermeneutics," accessed August 11, 2016. http://hirr.hartsem.edu/cgi-bin/mega/db.pl?db=default&uid=default&view_records=1&ID=*&sb=1

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Internal Creation of Others in North-South Korea Relations

Da In (Ann) Choi ■ Supervised by Dr. Konrad M. Lawson ■ School of History
Funded by Laidlaw Undergraduate Internship in Research and Leadership Programme

Objective: This project examines how the discourse of autonomy, which focused on **re-educating and re-vamping economic potential** of individuals, **standardized individuals' lives and beliefs.**

The Setting: The Japanese Occupation

- In 1920s, self-strengthening societies and the industrial bourgeoisie emerged as a response to growing nationalism. They also took part in shaping nationalism, as they emphasized individuals' roles in building the nation.

- The provisional government before the liberation responded to 3.1 movement in 1919 by envisioning a creation of new Korea, stressing upon **individuals' full equality and opportunities as members of the nation.**

Credits to www.koreanposter.com

Economic Control:

"There is autonomy, modernity, and **science in people's economy**. *Chollima* spirit indicates the spirit of the people as they struggle to stand up **by themselves**"
Nodong sinmun 1979.01.08

Credits to news.jtbc.joins.com

- "*Saemaul* movement focuses on control: **cultural, economic, and educational** as evidenced by **the reforms of the mind and** revolution as it regulates people's actions"
Park Chung Hee, 1972.03.18

"The purpose of education is to be faithful to **national autonomy and** cultivate capable of national subjects"
Ministry of Education (South Korea) 1973.06.09

Cultural & Educational Control

"Education is critical to successfully build socialism… to get rid of imperialism and attain autonomy, **science must succeed**"
Kim Il Sung, 1968.10.02

Credits to english.yonhapnews.co.kr

Internal Other within the Discourse

"South Chosun is a collection of US imperialists, **collaborators, and traitors**… they will turn Korea into a colonized country again. However, Chosun is one and people are one."
Kim Il Sung, 1949.01.01

"people must understand that present government had been shaped by their own hands… we regret North Korea, whose nation-building process had been **interrupted by the Soviet Union**"
Rhee Syng Man, 1949.08.15

Credits to english.yonhapnews.org

Conclusion

- The discourse of autonomy manifested itself in a diverse means of control: **cultural, economic, and educational** as evidenced by changes seen in Kim's and Park's *juche* and *Yuhsin* regimes in North and South Koreas

- **Enhancing individuals'** scientific knowledge, cultural belonging, and work ethics became a **system of surveillance** and forcibly **imposed a single idea of being "Korean"** on citizens

Credits to Huffingtonpost.com

MAPPING ROME'S DESTINY: TIME, SPACE AND TRAVEL IN VERGIL'S *AENEID*

[7] AENEAS' SHIELD

Venus presents Aeneas with a shield before he goes into battle for his land. Vulcan makes the shield in his workshop, just as he is credited with creating the divine objects with which the major gods are identified. This shield condenses key moments of Roman history. In depicting real events that Vergil's audience would be familiar with, the shield acts like a visual prophecy. It both signifies Aeneas' readiness to achieve the status of a god, and provides him with a godlike point of reference to remind him of the city relying on his victory if it is to come into existence.

INTRODUCTION

The gods and mortals of the *Aeneid* have different understandings of time and space. Vergil's gods know the consequences of events far in advance. They can see the earth from heaven as if they were looking down at a living map, and can fly through the air at great speed. Mortals, meanwhile, only perceive the world in front of them and think about space in terms of A to B. The gods can assist mortals by providing them with information about their route or the future more generally, but the two viewpoints remain fundamentally distinctive.

[1] AENEAS LEAVES TROY

Troy is destroyed after ten years of war. Jupiter intends to compensate the Trojans by bestowing an empire upon their descendants (the Romans) that will cover the earth and last forever. He also plans to make Aeneas, their leader, and an ambiguous 'Trojan Caesar' gods in due course for their services to this empire. Aeneas does not yet know about Jupiter's scheme, but as Troy burns he hears emotional prophecies from the ghosts of his loved ones. These tell him to sail to a 'Western land' and found a new city for their people. With his father and son, Aeneas makes his way through unfamiliar paths, following the direction signaled by a comet. Thus he takes his first steps on a journey that will 'lift him to the stars'. The Trojan refugees follow Aeneas, and together they build a fleet.

[6] ANCHISES SHOWS AENEAS THE ROMANS

Having almost completed his journey, Aeneas descends to the underworld to be briefly reunited with his father, who died in Sicily. Anchises presents to Aeneas the parade of future Roman heroes, showing him for the first time the people whose future he must fight for when he arrives in Italy.

This is a key moment in diverting Aeneas' focus away from simply finding a place where he and his people can rest to securing the land that will bring them glory for ages to come.

[2] CRETE IS THE WRONG DESTINATION

Aeneas' father misinterprets the oracle they receive from Apollo at Delos and the fleet sails to Crete. Confusion and delay follow Aeneas throughout his journey, as he tries to reconcile the piecemeal information that the gods provide him with. Vergil makes clear that the glory prophesied for Aeneas' people will not come to pass if they do not actively seek it, perhaps also providing a model of behaviour for his present-day Romans.

Divine intention and human endeavour come together in passages where Aeneas and his helmsman use the stars to navigate. They unknowingly follow the symbols of Aeneas' apotheosis in order to set his destiny in motion.

Map with locations: Latium, Cumae, Drepanum, Eryx, Carthage, Etna, Strophades, Buthrotum, Delos, Crete, Thrace, Troy

[5] MERCURY TO AENEAS

Mercury warns Aeneas that he is risking his son's inheritance by lingering in Carthage with Dido. He flies down *remigio alarum*, with the 'rowing of wings.' Oars are often imagined in Graeco-Roman literature as 'the wings of ships,' but a trope of the poem is that maritime travel is always vulnerable to elemental forces. Vergil shows that the right to 'wings' of any kind that enable movement across vast spaces is privileged, dependent on the goodwill of the gods. Icarus is mentioned as having died trying to fly, and Neptune demands the sacrifice of Aeneas' helmsman for their safety at sea.

[4] VENUS FROM ABOVE

Aeneas' mother is the goddess Venus. She watches over him, but Aeneas does not always perceive her influence. Her status in Rome as *Venus Genetrix*, mother of the Julian clan of Aeneas' descendants (which includes Julius Caesar and Augustus themselves), is dependent on Aeneas' success in finding Italy. She is an example of a god working covertly from heaven for the good of the Trojans, just as Juno acts against them whilst unseen by the mortal characters themselves.

[3] JUNO'S STORM HITS

Juno's vendetta against the Trojan people continues from the *Iliad*. She descends from heaven to have the King of the Winds stir up a deadly storm when she catches sight of Aeneas and his people too close to fulfilling their destiny for her liking. Helpless, Aeneas wishes he had died at Troy. In the face of such danger he seemingly forgets the support he does have amongst the gods. Aeneas' own doubt is something he must overcome if he is to succeed.

CONCLUSION: In order to fulfil his destiny, Aeneas has to think about the future from the perspective of the gods. This often means willingly putting himself and his people through further suffering for the promise of a shadowy destiny. However, the course of the journey allows him time to test his skill as a leader and his faith in the gods' patronage, until he is ready to risk further hardship by engaging in warfare once more in order to set Roman history into motion.

A Reconsideration of the Confessional Constituencies of the Clergy in Restoration Scotland (1660-1688)

Rory Forbes, School of History (Supervised by Professor Steve Murdoch)

University of St Andrews

Background

In 1660 Charles II was invited to return from exile. In 1685 he was succeeded by his brother James (VII & II). James was deposed by William of Orange (III & II) in the Revolution of 1688. The period between Charles' return and James' deposition is known as the Restoration.

In 1662 Charles replaced the Presbyterian church government in Scotland with an Episcopalian system. This change was reversed by William in 1689. The Episcopalian system established a clear hierarchy with ministers responsible to bishops and archbishops who in turn reported to the king. In contrast, Presbyterianism was anti-hierarchical with decisions being made by assemblies of ministers with limited involvement from the crown or state.

In brief, this project aims to establish the extent of the Presbyterian and Episcopalian constituencies in Scotland during the Restoration (1660-1688).

The Traditional Focus: Presbyterian Persecution

Victorian depictions of Presbyterian Persecution[2]
(Clockwise from top left): The execution of Rev. James Guthrie for treason in 1661; Rev. Richard Cameron at Airds Moss in 1680 where he was killed; Margaret Wilson is left to be drowned by the tide for refusing to renounce the Covenant; Presbyterians worship in the open at an illegal conventicle; the Bass Rock where many Presbyterian dissenters were imprisoned.

"Yonder is the Bass, rising like an immense tower out of the sea. How have times changed since the excellent of the earth were condemned, by the unjust and the dissolute, to wear out life on that solitary rock!"
-Hugh Miller on the Presbyterian Ministers imprisoned on the Bass Rock[1]

The Restoration in Scotland is commonly remembered as a period of persecution for Presbyterians. Scotland is portrayed as a Presbyterian country whose people refused to conform to a church government imposed by an anti-Presbyterian King, his Catholic successor, and an Episcopalian/Royalist minority. The Martyrs Memorial (see right) refers to eighteen thousand "murdered or destroyed".

The narrative has typically focused on the rhetoric and actions of a few key figures on both sides. The devotion of Presbyterian martyrs such as James Guthrie, Richard Cameron and Margaret Wilson (see left) is contrasted with the villainy of such figures as the Earl of Middleton and James Sharp, Archbishop of St Andrews.
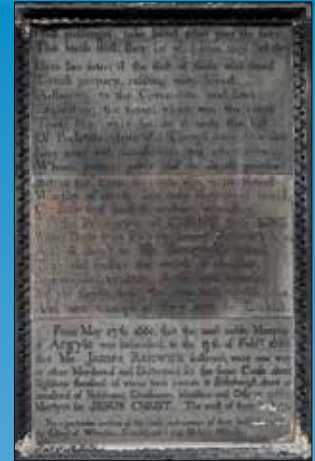
The Martyrs Memorial in Greyfriars Kirkyard[3]

Research

THE PRESBYTERIAN CONFORMIST
Colin Campbell (?-1667)
Minister of Blair-Atholl, Perthshire
Campbell served as a Military Chaplain with the Army of the Covenant in England and was a member of the hardline Protestor faction of the Presbyterian ministers. In spite of this, he conformed to Episcopacy.

THE UNBELIEVER
George Wemyss (1626-1666)
Minister at Scone, Perthshire
"When he came to die, he told his neighbours he had preach'd of heaven and hell, but never believed there was either the one or the other, till now he found he was certainly damned to hell because of his perjury and falsehood to Jesus Christ."

THE SURVIVOR
David Campbell (1619-1696)
Minister of Menmuir, Angus
Remained in the same charge for 52 years, surviving the War of the Three Kingdoms, the Interregnum, the Restoration and the 'Glorious' Revolution.

THE CATHOLIC
Colin Dalgleish (?)
Minister of Glenluce, Galloway
In 1686 he was granted a pension of £50 sterling by James VII, "about which time he left his charge and joined the Roman Catholic Church."

This project attempts to look beyond the key figures in the Presbyterian and Episcopalian/Royalist factions to try and understand how the Scottish clergy as a whole responded to the confessional disputes of the time. A database was constructed, recording the details of 2,189 ministers across 946 parishes.

It soon became clear that a Presbyterian vs. Episcopalian dichotomy was a gross oversimplification of the confessional landscape during the Restoration. The adjoining case studies illustrate the diversity of the Scottish clergy.[4]

Table 1 was compiled by categorising each minister as either Presbyterian, Episcopalian/Royalist, Conformist, Internal or Unknown.

THE MAN OF DISREPUTE
James Gordon (1645-1693)
Minister in 1666 but promptly eloped with a local lady and fled to Londonderry in spite of being engaged to another woman; minister again in 1671 but promptly eloped with his housekeeper; deprived in 1674 for "swearing, drinking, striking, and denying his own subscription"; excommunicated in 1681 "after much contumacy"; thereafter preached at a Presbyterian meeting house in Ireland but was paid by the government to act as a spy.

Table 1: Confessional Stances of the Ministers of Scotland (1660-1688)	No. of Ministers	Percentage
Presbyterian (Those who were ejected or resigned in 1662 or who were active in illegal Presbyterian meeting houses and gatherings)	463	21%
Episcopalian/Royalist (Those who were deprived of their charges at the 1688 Revolution for their commitment to Episcopacy or the Stuart monarchy and those whose writings or oratory aligned them with such a stance)	684	31%
Conformist (Those who displayed equal willingness to accept a Presbyterian or Episcopalian church government)	579	26%
Internal (Those who became ministers after 1662 and retired or died before the Revolution. While they were clearly willing to adhere to Episcopacy, their confessional stances were not meaningfully tested)	343	16%
Unknown (Those with insufficient or contradictory data)	120	6%
Total	2189	100%
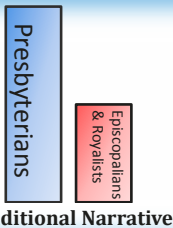
Conclusion

The results of this project's analysis challenge the traditional narrative of a persecuted Presbyterian majority in Restoration Scotland. Scotland was not so much a country united against the interference of an absentee king as a country deeply divided internally along confessional lines.

However, it should be noted that for at least 26% of the ministers, the form of church government was not a crucial issue. As with any issue, there are those who support one side, those who support the other and a group in the middle with other priorities.

Presbyterians | Episcopalians & Royalists
Traditional Narrative

Presbyterians | Conformists | Episcopalians & Royalists | Internal | ?
My Findings

References:
[1] Bayne, Peter, *The Life and Letters of Hugh Miller* (Cambridge, 1871) p. 6
[2] Clockwise from Top Left: Public Domain, copied from *A History of the Scottish People* by Rev. Thomas Thomson, Vol. 5, p. 130; Public Domain, copied from *Ibid.* p. 182; Public Domain, copied from *Once a Week* [July 19 1862]; Public Domain, copied from http://www.thereformation.info/east_nisbet_conventicle.htm; Public Domain, Copied from *The Cameronian philosopher: Alexander Shields* by Hector MacPherson (1932)
[3] Alan Wilson, Alamy Stock Photo
[4] Quotations in case studies from *Fasti ecclesiae scoticanae: the succession of ministers in the Church of Scotland from the Reformation v. 1-7*, edited by Hew Scott (Edinburgh, 1915-1928)

The Plague of the Unknown and the Production of Power:
How Literature Teaches us to Care at the Crossroads of the Arts, Medicine, Humanities, and Healthcare

thes/s

Through an engagement with literature, medicine learns to acknowledge, value, and harness the unknown, thereby deconstructing the known/unknown binary and redistributing power equally as one cares for the Other (the patient) through illness and health.

introduction

Caring for our bodies and minds occurs at a crossroads—what I like to call the crossroads of care: where the arts, medicine, humanities, and healthcare intersect. Research and practice at this crossroads has proliferated in the last few decades under the titles of medical humanities, health humanities, narrative medicine, art of medicine, and more. As a student of English literature, I am drawn to focus on the kind of work that attends to literature and narratives in medicine. This work seeks to explore, legitimise, and innovate what one can come to know by engaging with literature, and how this knowledge can be harnessed to improve healthcare education and practices. Yet I take this approach to task by revealing that what we come to know through an engagement with literature is—paradoxically—the unknown. And it is knowing the unknown that—ultimately—transforms the way power is distributed when caring for each other through illness and health.

The study of literature is made possible, in the first and final instances, through an infinite encounter with the unknown. The reason it is still fruitful and exciting to study Rumi's poetry after centuries of analysis is because we can never claim to know everything about it (what it means, how it functions, how it impacts us, and more). In other words: Rumi's poetry, like all literature, will always be plagued by something unknown for future students of literature to uncover. In medicine, the plague of the unknown produces death and presently produces fear and aversion; in literature, the plague of the unknown produces possibilities for future life—opportunities to read and reread (bring to life) works of literature for an infinite future.

New Criticism is founded upon William Empson's *Seven Types of Ambiguity*, which reveals how vibrant 'close readings' of literature are made possible by attending to the ambiguity inherent in the formal and rhetorical devices of literature.

Poststructuralist literary criticism demonstrates how language cannot be contained within binaries by tracing literature's infinite play of signs and difference (deconstructive maneuvers) which evade any fixed, final analysis or interpretation and remain unknown.

prog
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Narrative medicine workshop
Attending an advanced narrative medicine workshop at Columbia University allowed me to learn from and with the leading humanities scholars and physicians in the field.

Shadowing doctors
The opportunity to shadow Dr. Shane Neilson in a university student health clinic and Dr. Ho Ping Kong's internal medicine team at a major Toronto hospital allowed me to witness how their investment in the literary side of medicine translates in their medical practice.

Creative writing
Reflecting upon my own encounters with medicine through creative writing grounded my research and theory in my own lived experience, aligning my work with the endeavours of many postcolonial writers.

Literature review
A review of the narrative- and literary-based approaches and interventions in medicine traced where the unknown was embraced or averted and the consequences of these reactions.

Theorising
Postcolonial, feminist, and poststructuralist theory were used as a foundation to develop my own theory regarding the role of the unknown in literature and medicine.

Suggesting sample texts
I selected several excerpts from postcolonial, feminist, and queer novels as examples of works that can be close read with medical students and practitioners to hone how to embrace the unknown.

the unknown other

The danger of being averse to the unknown—of producing the known as privileged and distinct from the unknown—manifests most intimately in the I/Other binary. We come to know the 'I' deeply (perhaps even fully) by virtue of being that self, but the 'Other' always remains distinct and largely unknown to the self. These binaric divisions are never neutral; they are hierarchal and the privileging of I over Other and known over unknown is often amplified across the intersections and divisions of gender, race, culture, religion, ability, sexuality, and socioeconomic status. The history and present of (post)colonialism situates the danger of being averse to the unknown in the re-inscription of hierarchic binaries.

Homi Bhabha's *The Location of Culture*
Upon encountering a different land, people, culture, religion, and race, the colonisers envision a threat to their systems of knowledge and, in response, seek to re-affirm their illusion of knowledge by identifying the colonised within simplistic and reductive hierarchic binaries, like coloniser/colonised.

Linda Alcoff's 'The Problem of Speaking for Others'
The desire to speak for others is rooted in a desire to articulate one's mastery of knowledge, which forecloses the opportunity for the other to speak and thus (re)produces systems of privilege as authority, knowledge, and speech are withheld from the other.

Therefore, medicine's aversion to the unknown not only produces a known/unknown binary, but also the I/Other binary, which is central to the production of colonial power differentials in medicine. And narrative and literary approaches to medicine tackle these power differentials through the unknown.

(unknown in narrative- and literary-based approaches to medicine)

Arthur Frank's *At The Will of the Body* and *The Wounded Storyteller*
Modern medicine is the colonisation of the patient's body, and the postcolonial era of medicine is when patients tell their own stories of illness and health.

Craig Irvine's 'The Other Side of Silence'
Literature's power in medical education lies in its ability to 'bring close distance'—to come close to the unknown (and the intimately connected Other) which always distances itself by virtue of being infinite and incomprehensible.

Harold Schweizer's 'To Give Suffering a Language'
Suffering, like literature, can never be wholly understood or explained; they are both always plagued by an unknown, yet still tempt interpretation, thus literary inquiry can teach medicine how to attend to suffering.

Arno Kumagai and Delese Wear and 'Making Strange'
The power of the humanities in medical education lies in alienation and estrangement: the ability to 'reconsider familiar ideas, situations, and relationships in new and different way' just as the unknown allows the same literary text to be read in new and different ways.

Arthur Kleinman's Explanatory Models
This revolutionary model asks physicians to ask themselves and their patient about how they conceptualise the illness. The patient and physician's answers rarely coincide, revealing a space of unknown between their conceptualisations.

Sayantani DasGupta and 'Narrative Humility'
Narrative humility allows physicians to engage with patients' stories without assuming that they can be definitively interpreted, wholly understood, and mastered; instead, the physician must be open to the ambiguity in the patients' story, just as the literary critic must be open to the unknown in a text.

Alan Bleakly and 'Medicine's Literalism'
Medicine's literalism produces an intolerance of ambiguity and uncertainty, which is a central feature of an authoritarian system. Studying literature presents the antidote to medicine's literalism since fruitful literary analysis only occurs beyond the literal and into the unknown of a text.

close reading

NW by Zadie Smith, *The Kappa Child* by Hiromi Goto, *To The Lighthouse* by Virginia Woolf, and *In The Body of the World* by Eve Ensler heighten the reader's sense of the unknown through literary techniques that continuously evade the reader's attempts at interpretation, meaning-making and knowing the story, thus making them particularly powerful to close read with medical educators and practitioners. These techniques include: a shifting or ambiguous narrative voice/perspective, poetic prose, densely overlapping metaphors, and unconventional sentence structures.

(unknown in medicine)

Roter and Hall and Doctor/Patient Communication
Physicians interrupt patients after an average of 18 seconds, demonstrating a desire to speak for patients.

Kenneth Ludmerer's 'Time to Heal'
The central challenge to medical education for the past centuries is students' intolerance to uncertainty.

Lisa Wynn et al. and Sexual Health Language
Patients assign an immense variety of definitions and metaphors to words used in reference to their sexual and reproductive health, so physicians cannot assume to easily know what they mean.

Shane Neilson's 'Pain As Metaphor'
The illusion of hard knowledge in reductive, neuron-based metaphors for pain prevent medicine from improving its approach to pain.

S. Wayne et al and Underserved Patients
Increasing intolerance to ambiguity and uncertainty among medical students is associated to more negative attitudes towards underserved patients.

Luther and Crandall, and Ambiguity and Uncertainty
Physicians largely face ambiguity and uncertainty in medical practice, yet their resistance to it results in increased frustration and eventually burnout.

Dr. Ho Ping Kong's 'The Art of Medicine'
Physicians frequently face patients with symptoms, but no clear, known diagnosis or treatment. With these cases that are unknown to science, physicians can only draw upon the arts.

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Memories of Scottish Fishing Music

University of St Andrews

Margaret Hyland – Laidlaw Undergraduate Internship 2016

Introduction

From the mid-19th to mid-20th century, Scotland's fishing industry experienced an enormous boom. The fleets followed the herring around the coast of Great Britain from May to October. Coastal communities across Scotland were engaged in the fishing - not just as fishermen, but also as the "fisher lassies", young women who worked as herring gutters in the fishing ports, ready to gut and pack the fish when the catch landed.

The fishing communities of Scotland have a rich but under-studied musical tradition. In order to investigate what and why Scottish fisherfolk sang, I researched in online archives, worked with museums and local history societies throughout Scotland and northern England, read Scottish song collections and scholarly publications, and interviewed several people from the East Neuk and Stornoway, two centres of the Scottish fishing industry. The songs I found fell into the three categories below.

> 'I sometimes think we sang to stop ourselves crying.'
> – Mary Bella Findlay, a herring gutter from Whitehills

> 'Niver mine we wis aye singin an lauchin, we hid some happy times spite o it a.'
> – Maggie Duthie, a herring gutter from Buckie

> 'The foreman says, "You may be singing yourself out of a job!" And one of the apprentices, he says, "We'll maybe sing ourselves into a better one!"'
> – Philip Hughes, a boat builder and fisherman from St Monans

> 'Ye'd hear em, ye'd hear em singan in e bay sometimes fan ye's comin in... ye'd hear e fishermen singan in their boats.'
> – Alec Thomson, a fisherman from Thurso

1. Rhythmic Work Song

The Gaelic-speaking Highlands and Islands have a strong tradition of rhythmic work song. In this type of music, repetitive tasks are accompanied by songs whose rhythms match the work. This helps to coordinate the work among many people. Fishing has not traditionally been studied in this context, but my research found that fisherfolk sang to accompany rhythmic tasks such as gutting, rowing, and mending nets. When gutting fish, women stood around low-lying farlans, gutting as many as one fish per second.

Consistent rhythm was essential to efficiently gut and pack the fish while minimising injury from the sharp knives. Many fisher girls sang light-hearted songs about their friends and boyfriends, reflecting the frequent courting that happened between young fishermen and fisher lassies. They also sometimes sang about their difficult working conditions. Some gutters who experienced evangelical revivals sang hymns with nautical themes. Gutters sang

in Gaelic, English or Scots depending on where they came from. Gaelic fishermen also sang while rowing in order to coordinate the crew's movements. Rowing songs sometimes survived hundreds of years in the oral tradition and dealt with themes of traditional Highland clan life, laments, and the supernatural, such as witches or mermaids. Oyster fishermen in the Firth of Forth sometimes sang while rowing, and they would never sing the same song twice in an attempt to trick the fish.

2. Songs Sung at Work

Many fisherfolk sang at work even when rhythmic coordination was not important. Drift net fishing involved waiting several hours at night between shooting the nets and hauling them in. In the Northeast of Scotland, when fishermen got radios on their boats in the 1950s, men would pass the time by singing hymns to each other, and to their families who listened at home. They considered this a missionary activity. Other fishermen sometimes sang about missing their sweethearts. Some East Coast fishermen sang hymns as they returned to harbour with a good catch. Whalers also experienced long periods of inactivity on board and sang songs about their experiences. Herring girls sang when they travelled to and from work each day, and on the train that took them from their home villages to the large fishing ports. These

songs were often playful and even racy courtship songs, though the Northeastern girls who converted to evangelical Christianity switched to singing hymns. They also sang while they were waiting for the boats to come in. Many fishermen spent time working as boat builders and sang in the yards. In St Monans, for example, the men in the boatyard sang hymns with nautical themes, as well as popular folk songs like "Molly Malone."

3. Songs About Their Lives

In the Western Isles, communities often had local fishermen bards who would write songs about their lives. They sang in praise of boats, even describing them as lovers. They sang about difficult working conditions, but also about humorous occasions, making fun of their fellows who were inept at fishing or courting women. Fishing tragedies were often commemorated in song by these local bards. Because fishermen lived a fairly itinerant lifestyle, they were often separated from their loved ones. Fishermen wrote songs about the women they often left behind, who sometimes married someone else in their absence. On the other hand, women's compositions often reflected the

anxiety of loving a man whose profession is dangerous and takes him frequently away from his family. The wives and mothers of fishermen lost at sea sometimes wrote haunting laments. Families often sailed together, so if one ship was lost it could mean a woman lost her father, brother, husband and sons all at once. Unmarried women also sang of the fishermen they hoped would return. A few songs survive by pregnant women, warning herring gutters and other young women never to trust the love of a fisherman who has a woman in every port. Fisherfolk also sang about supernatural creatures of the sea, blaming mermaids for the deaths of fishermen and telling stories of the seal people, or "selkies". East Coast fishermen were more likely to write hymns or poems.

ART ON THE CATWALK

performance art in the shows of

ALEXANDER McQUEEN

❦ OBJECTIVE

To research elements of the 'performative' in the catwalk shows of Alexander McQueen, and discern if there is enough proof of artistic merit to classify haute-couture fashion and fashion performances as a serious art form to be included in the canon of academia, research and journalism.

STOP 1: PERFORMANCE VS. SPECTACLE

McQueen's runway shows are often referred to as 'spectacular'. The utilisation of the term 'spectacle', however, raises issues, as the term is applied somewhat derogatorily. In *The Society of the Spectacle* (1967), French theorist Guy Debord states that the 'spectacle' is a tyrannical and superficial phenomenon that masks reality and removes humankind from its agency.[1] Fashion theorists have taken Debord's claims and associated them with the entertaining runway presentations of McQueen, stating that the catwalk serves as a marketing tool that camouflages commercial incentives. However, this accusation cannot justify McQueen's exquisite curatorial approach towards the display of his garments. The commercial and mass-produced aspects of fashion have prevented it from being considered an art form, but McQueen saw the runway as his canvas, the place where his art—the garments—could be given complete creative expression.

STOP 2: THE JUSTIFICATION FOR FASHION PERFORMANCE

Performance art is a large artistic movement that has spanned across decades and accumulated multiple sub-categories. Fashion performance most appropriately fits under the category of 'live art'. Lois Keidan's definition of live art declares that it is 'not a form at all but a reserved site of *interdisciplinarity*, a kind of rhetorical and curatorial space that operates at the margins, culturally and aesthetically, and that *eschews institutionalised recognisability*'.[2] The difficulty in placing fashion performances due to its interdisciplinarity has resulted in neglect for its scholarly analysis, thus curbing it to 'spectacle' rather than fine art. Under the conditions for live art, however, fashion performance has a place within the performance art family tree.

STOP 3: ARTISTIC INFLUENCES

McQueen's runway presentations were often directly influenced by contemporary fine artists and performance artists. Most famously, the finale for his S/S 1999 collection, *No. 13*, was derived from Rebecca Horn's installation artwork, *High Moon* (1991). Borrowing the motif of two guns spraying each other with paint, McQueen expertly incorporated this into *No. 13* by spray-painting model Shalom Harlow with acid-green and black paint whilst she rotated on a moving platform (see below). Another major influence is body artist Vanessa Beecroft, who utilises the bodies of nude, often painted females donned in designer footwear, and commands them to stand still and aloof in formation for hours. McQueen's S/S 2005 collection, *It's Only a Game*, replicated this aesthetic, as the show was choreographed as a live chessboard match between the East and the West, with models standing in Beecroft-esque fashion.

STOP 4: [CONCLUSION] THE BIRTH OF A NEW ART MOVEMENT

In his book, *Event,* contemporary philosopher Slavok Žižek describes all evental experiences, such as the emergence of a new art movement, as 'not something that occurs within the world, but... *a change of the very frame through which we perceive the world and engage in it*'.[3] A rupture of fashion into the fine art world is thus at first traumatic and unwelcome, simply because it is a sudden and unexpected occurrence—it exceeds its causes and changes the frame in which one perceives what the broad category of art includes. However, the conditions of today's post-contemporary age signal a new artistic era. It is time to consider fashion performance and haute couture as a new art form, and lend it the scholarly analysis and recognition it deserves.

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PROJECT SUPERVISED BY DR CATHERINE SPENCER

THE POLITICS OF POETRY IN VICTORIAN BRITAIN

Eirinie Lapidaki - Supervisor: Dr Clare Gill - University of St Andrews School of English - Laidlaw Undergraduate Internship in Research and Leadership Programme 2016

Introduction

In the wake of the Industrial Revolution, Victorian Britain was rife with poverty and ripe for social reform. Chartists sought to restructure the electoral process, while voluntary organisations were assembled to assist the poor and destitute. Yet social reform was not merely the domain of activists and wealthy philanthropists; poets from a variety of social backgrounds attempted to use poetry to expose the poverty which was ravaging Victorian Britain's working classes. My project sought to discover connections between this poetry and Victorian social reform through archival work and in-depth analysis of a variety of poems which relate to social reform.

The Work of Ellen Johnston

Johnston was a power-loom operator at Chapelshade Works Dundee, and her poetic works provide a valuable insight into mid-Victorian working-class life. During the archival element of my project, I discovered a copy of Ellen Johnston's *Autobiography, Poems, and Songs of Ellen Johnston the 'Factory Girl'* (Glasgow: William Love, 1867). This collection contains a list of subscribers, individuals who contributed money to the book's publication by pre-ordering copies. This list proved invaluable to my project, and I undertook further research to identify the individuals on the list. This allowed me to paint a clear picture of the sorts of people who supported Victorian social reform poetry, and in particular poetry by working-class writers.

Annotated Bibliography

A major element of my project was the creation of an annotated bibliography of poems and secondary resources, which will be used by Dr Clare Gill in her module 'Read all About it! Victorian Literature and the Press'. The bibliography is divided into the following sections: Industry and the Workhouse, Mothers and Children, Fallen Women, and Illness and Death. These sections encompass four prominent areas of Victorian social reform, and the poetry associated with each provides a contemporary perspective on each subject. Each poem was chosen in order to provide as broad a collection as possible, as far as possible encompassing poets of every class, gender, political opinion.

Dore, Gustave , 'Wentworth Street, Whitechapel', 1872,
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Who Supported this Poetry?

In order for poetry dealing with social reform to incite or encourage social change, it must have an influential readership. Ellen Johnston's subscribers list provides us with a collection of such individuals, many of whom were politically active, or held prominent positions in the societies in which they lived.

The list of subscribers includes William Willoughby Cole, the 3rd Earl of Enniskillen and a Conservative MP, Unitarian campaigner for religious and civil liberty Sir John Bowring, and William Crawford the trade unionist, politician and social reformer.

Also included on the list are a number of merchants based in Dundee, several individuals involved in publishing, and a number of religious figures.

It is unclear why Johnston received so much support, and there are likely as many reasons as there are subscribers. Many individuals may have donated out of a sense of philanthropic duty, others may have been interested in her political message. Still others may have simply enjoyed her poetry.

What is certain is that the popularity of such works, and their frequently influential readership, suggests a correlation between poetry concerning social reform, and social change.

Conclusion and Findings

This project has uncovered a number of connections between Victorian poetry and social reform, suggesting the public awareness created by poetry influenced social change. While further research will be required in order to fully determine this influence, my project has certainly highlighted the impact of social reform on Victorian lives. The poetry of the period reflects the importance of reform in the era, and provides a useful historical resource when brought into dialogue with primary sources.

Timeline

Event	Year	Poem
Poor Law leads to Parish Workhouses being introduced	1834	
Sir Thomas Noon Talfourd Liberal MP for Reading, works with Caroline Norton	1835	'The Factory' - Letitia E. Landon
Influenza, typhus, smallpox, and scarlet fever epidemics begin	1836	'Voice from the Factories' - Caroline Norton
Queen Victoria's coronation, economic crisis	1837	
Publication of Peoples Charter, railway boom begins	1838	'Infanticide in Madagascar' - Letitia E. Landon
Custody of Infants Act gives mothers limited rights to their children	1839	
For every one person who dies of old age or violence, eight die from disease		
Vaccination act makes free vaccinations available	1840	
Edwin Chadwick publishes 'Sanitary Conditions [...]'	1841	
Mean life expectancy in London 37, 26 in Liverpool		
Recession becomes a Depression, causing public unrest to sweep the country		
Influenza, typhus, smallpox, and scarlet fever epidemics end	1842	
	1843	'The Song of the Shirt' - Thomas Hood
		'The Cry of the Children' - Elizabeth Barrett Browning
Labour in Factories Act, introduced by Sir James Graham.	1844	'The Bridge of Sighs' - Thomas Hood
		'Sweet Sleeper now thy Warfare's Over' - James Morison
Engels 'Condition of the Working Class in England' published	1845	
Irish potato blight begins		
Cholera, typhus and typhoid epidemics. First of several Nuisances Removal Acts	1846	
Cholera, typhus and typhoid epidemics, Ten Hour Act, Urania Cottage established	1847	
Irish potato blight ends: up to 1million dead of malnutrition, Public Health Bill passed	1848	'The People's Anthem' - Ebenezer Elliott
Cholera, typhus and typhoid epidemics	1849	
Factories Act amended	1850	
Britain is the worlds richest country, Great Exhibition	1851	
Queen Victoria visits the Black County and laments industrialisation	1852	
Compulsory Vaccination Act for infants within four months of birth	1853	'A Song for the Workers' - Eliza Cook
London Working Men's College founded	1854	
Crimean War begins		
Stamp duties on newspapers abolished	1855	
41% of brides in England & Wales and 23% in Scotland unable to sign marriage register		
Crimean War ends	1856	'Aurora Leigh' - Elizabeth Barrett Browning
Matrimonial Causes Act, divorce courts established	1857	
Workhouse visiting society formed	1858	'The Cradle Song of the Poor' - Adelaide Anne Procter
	1859	'The Little Doffer' - Edwin Waugh
Food and Drugs Act prevents the adulteration of food	1860	
Local Government Act states sewage must be purified	1861	'A Song in the City' - Gerald Massey
		'At Last' - Elizabeth Siddal
Nightingale School for Nurses established	1862	'Goblin Market' - Christina Rossetti
Over 1000 newspapers in Britain	1863	
First Contagious Diseases Act passed	1864	
Barbara Bodichon forms Women's Suffrage Committee	1865	
Second Contagious Diseases Act	1866	"The Iniquity of the Fathers Upon the Children" - Christina Rossetti
First Women's Suffrage Bill introduced to parliament	1867	'To Two Bereaved' - Thomas Ashe
First Industrial Home created, providing ex prostitutes with work		'Autobiography, Poems and Songs of Ellen Johnson the 'Factory Girl" - Ellen Johnson
Factory Extention Act		
Trades Union Congress founded	1868	
Pharmacy Act allows only licenced practitioners to sell 'dangerous drugs'	1869	
Ladies National Association for the Repeal of the Contagious Diseases Acts founded		
75% of Working Class Adults can read		
Education Act, and First Married Women's Property Act introduced	1870	'Jenny' - Dante Gabriel Rossetti
		'A Castaway' - Augusta Webster
Bank Holidays Act	1871	
Metalliferous Mines Regulation Act	1872	
	1873	
Women's Trade Union League formed, Factory Act limits working day for women/y.p	1874	
Female physicians licenced to practice	1875	
Borough councils given power to remove slums, but new accomodation rarely provided		
	1876	
	1877	
Legal separation permitted if a wife is repeatedly assaulted	1878	
First women's colleges at Oxford	1879	
Elementary education becomes compulsory for children aged 7 to 10	1880	'On a Dead Child' - Robert Bridges
Women can get degrees from University of London		
	1881	'Manchester by Night' - Mathilde Blind
		'The Lady Doctor' - Constance Naden
		'The Street-Children's Dance' - Mathilde Blind
Second Married Women's Property Act	1882	
Married women can aquire their own property	1883	
NSPCC founded		
	1884	'The Scape-Goat' - A. Mary F. Robinson
Criminal Law Amendment Act	1885	
Contagious Diseases Acts Repealed	1886	
Maintenance in Case of Desertion Act and The Guardianship of Infants Act	1887	
1400 women strike in protest at the Bryant and May matchstick factory	1888	
Prohibited to employ children under 10	1889	'In a Workhouse' - Lionel Johnson
Miners Federation founded		'Womankind' - Gerald Massey
Housing of the Working Classes Act	1890	
Some schools became free	1891	
Tenament Blocks begin to be built in London	1892	'The Magdalen' - Katherine Bradley and Edith Cooper as Michael Field
Elementary Education Act (Blind and Deaf Children), Independent Labour Party formed	1893	
Trade union membership reaches 1.5 million	1894	
231 dead babies found on London's streets partly due to stigma against unwed mothers	1895	'The Shepherdess' - Alice Meynell
Real wages have risen by 45% over last 15 years	1896	
NUWSS founded, Workmen's Compensation Act established	1897	
	1898	
Infant mortality rate 163/1000	1899	
	1900	
Queen Victoria dies aged 80	1901	

Irvine Welsh's Scotland: The Reality of Working Class Brutality, Addiction and Abuse.

The Beginning:

Irvine Welsh exploded into the Scottish literary cannon in 1993 with the publication of his seminal first novel *Trainspotting*. The cult classic gave a voice to a section of society that had long been marginalised, disenfranchised and ignored. My impetus for choosing the literature of Irvine Welsh to research was driven by a desire to interrogate and investigate his depiction of working-class Scottish identity and culture in his novels, with a particular focus on the **brutality, addiction and abuse** that are rife within them. I endeavoured to reconcile the supposed 'reality', or lack thereof, of the fiction of Welsh, with the real social problems about which he writes. In this poster I explore these themes via the various techniques and phenomena Welsh employs throughout his literature.

'Performative' Scottish Identity.
'Instead, Scottish Identity has Become Performative…'
(Schoene,12)

The Junkie

The character of Renton from *Trainspotting*, makes the decision to exist outside of the 'accepted' realms of society, by abusing heroin. He has a deep-rooted repulsion to a so-called 'straight-peg' lifestyle and he tarnishes meaningful relationships in order to avoid becoming ingratiated in this culture of normality. However, this rejection of society is itself a decisive, performative statement. His surrender to heroin is a political performance which satisfies an unspecified philosophical longing within him to live a life of opposition. The inclusion of a character such as this goes some way to challenging long held assumptions about drug addicts lack of choice or agency. Renton is an agent of decisive action and is fully aware of the consequences of his choices: he decides not to 'Choose life', he chooses addiction instead. Through the character of Renton one can see the performative nature of addiction, as it results from a conscious choice.

The Hard Man

Another figure of Scottish performativity comes in the formidable form of Franco Begbie of the *Trainspotting* series; the prototypical Scottish 'Hard Man'. Begbie, and those around him, have been instrumental in creating his mythic persona of threat and invincibility, politely ignoring the deep-seated sociopathy and psychosis which obviously exists in an individual so predisposed to the unjustified excesses of violence he so relishes. Totally repulsed by his friends' heroin addictions, Begbie commits his life to the pursuit of brutalising and terrorising. His hard man persona becomes imbedded in Leith's cultural history, his violent outbursts largely manufactured to continue this myth. Begbie's violence is deliberate and performative.

Displaced Abjection in the Scottish Psyche.
'Displaced abjection: 'the process whereby "low" social groups turn their figurative and actual power, not against those in authority, but against those who are even "lower".'

As the title of this project suggests, the literature of Welsh is often violent and brutal. Much of this violence and abuse is expressed in the sexism and racism that constitute a central part of the rhetoric of many of the characters. While discrimination in general is by no means restricted to 'lower' social classes, there are certainly mechanisms at work which internalise and normalise discrimination within the class groups that Welsh portrays in his literature: there can be no denial that displaced abjection occurs and is always, by virtue of itself, violent. Problems arise however, in Welsh's refusal to condemn (or condone) the violence he portrays in his works.

Scotland: '**The Colonised Nation of your diseased mind**' (*Marabou Stork Nightmares*).

Constitutionally, politically, religiously, socially, Scotland is a divided nation. It is a country replete in conflicting ideologies; one need only think of the extreme violence encountered in Scottish football, a game that has been disfigured by the Catholic/Protestant rivalries of its biggest teams. Welsh often documents both the violence, and the arbitrariness, of football hooliganism, and in *Marabou Stork Nightmares,* he examines this brutality through the lens of colonialism. Postcolonial theory has taught us that the language of colonialism is always violent, working to silence the 'other'. While Welsh does not always get his colonial comparisons right, he touches on ideas not only of physical violence, but the violence and power of discourse too.

The Conclusion: (Re)-Working Class.

One critic has noted that '*Trainspotting* **implicitly questions the viability of such terms as 'working-class' when describing these characters' (21).** I tackled this project from the outset as a study in the 'reality' of the 'working-class' narrative Welsh creates, but came to realise that he is in fact documenting the predicament of having a non-working class and, in doing so, he utilises techniques that ultimately question assumptions about reality itself. The hyper-masculine, violent performances of his characters, and the hedonistic, chemically-altered lives they choose to lead culminates in a literature that both addresses important issues like addiction and hooliganism within Scottish culture, but also complicates them by use of visceral, extreme imagery and language. Welsh's literature uses the language of colonialism and the phenomenon of displaced abjection to trouble the binary distinctions we are so used to making in everyday life. Addicts are not always helpless, the working class are no longer working, nations are not always (if ever) united. The work of Welsh might be a lurid, augmented, distorted version of working-class reality, but what it offers to the classes about whom he writes, is a reason to engage with, to question and to criticise the reality within which they find themselves.

"CHOOSE LIFE…"

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Henry S. Salt and Animal Rights:
'A Whole-Minded Reverence For All Our Fellow Beings'

'It is not only, and not primarily, for the sake of the victims that we plead, but for the sake of mankind itself': A Life in Protest

Henry S. Salt (1851-1939) was an English humanitarian and social reformer who believed in the equality of all sentient life and abhorred cruelty, suffering and oppression. He advocated animal rights, moral vegetarianism, socialism, secularism, pacifism, decolonisation, and simplification of lifestyle. Salt wrote or edited over one hundred books, essays and verses on a broad range of topics.

George Hendrick (1977) claimed that Salt had 'failed… to change many of the baser ideas and practices of man'. On the other hand, Dan Weinbren (1994) credited Salt and his Humanitarian League with having 'inspired the environmental movement'. This research aimed to analyse Henry S. Salt's ideas within their historical context and assess the extent to which they have been 'adopted in the end', as Salt believed they would be.

'An essential feature of democracy':
Salt's View on Animal Rights

Concept of animal rights has roots in the Enlightenment; French Revolutionary-era debate on the Rights of Man and Woman extended to non-humans. Darwin's book *On the Origin of Species* (1859) was also significant in changing attitudes towards animals.

http://www.henrysalt.co.uk   https://wellcomeimages.org
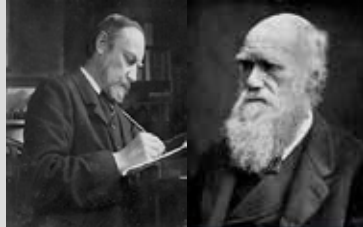
'We claim for animals, as for men, in so far as it is compatible with the public welfare, a measure of individuality and freedom, a space in which to live their own lives- in a word, rights.'

'Brought to our shores in floating mortuaries':
Economics and Trade in the Industrial Age

Policy of Free Trade adopted by British government in 1848. Development of freezing and refrigeration technology, and low prices, led to increase in transoceanic meat trade from 1870s and 1880s. By 1902, the British meat trade was worth around £50,000,000.

http://wellcomeimages.org

*'Neath this cold stone, all bleak and bare,
Lies stony-hearted Laissez-Faire,
That loveless economic crone,
Who croaked the creed of 'let alone':
Let each alone ('tis Nature's way)
To rob and spoil like beast of prey,
Nor pause to ask who fail and thrive,
Assured the fittest still survive…'*

'Not only cruel towards animals, but degrading to men': Salt on Society and "Civilization"

Animals used for a wide array of purposes including labour, fashion, sport, vivisection, and food. Slaughterhouses and butcher's shops were often unlicensed and associated with the worst cruelties. Salt described these institutions as 'dens of torment'.

http://www.burypastandpresent.org.uk

'No community possessed of true refinement will tolerate such degrading and disgusting institutions as the slaughter-house and the butcher's shop, both of them a disgrace to civilization and decency.'

'The experimental torture of the laboratory':
Science, "Progress", and Modernity

Salt saw no distinction between vivisection- practised by educated people- and other forms of animal cruelty, which were usually blamed on working-class brutality.

Following the First World War, a renewed faith in science as the motor of "progress": humanitarians were criticised as a 'throwback' to the Victorian era. The Humanitarian League disbanded in 1919 and Salt's ideas were neglected for over half a century.

http://wellcomeimages.org

*'What's in a name? Why, much! Relief
For doer of ill deed.
Say "Private enterprise", and thief
From disrepute is freed;
Say "Sport", all's fair; say "War", the Church
Will bless the guns that kill:
Speak but the magic word "Research",
And torture as you will!'*

'As civilization advances…': Henry S. Salt's Legacy

Emergence of the modern environmental movement in 1960s and 1970s and animal rights activism in the 1980s and 1990s gave Salt's work, and the concept of animal rights more generally, a new relevance and a more receptive audience. Although several of the cruelties Salt protested against still persist to some extent, attitudes towards fox-hunting are an example of the social stigma attached to animal cruelty in the twenty-first century, while vivisection and zoos are more morally-ambiguous today than in the Victorian and Edwardian eras.

The use of animals for clothing seems to fluctuate according to fashion rather than ethics. Although meat-eating shows little sign of being completely abandoned, Salt emphasised that food reform would take place very gradually. In support of this prediction, a 1998 study suggested that 5% of British people identified as vegetarians, with 5,000 people per week converting to a meatless diet (Kean, 1998).

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The Changing Face of Fear:
An Examination of the Gothic Genre and its Cultural Currency

This project aimed to examine changes in the gothic genre and the reception of four key gothic texts, both at the time of publication and in the 21st century.

1.
Ann Radcliffe, *A Sicilian Romance* (1790).

❖ This text is characteristic of the **female gothic**, a strand of the genre for which Radcliffe became famous. She established techniques that would later become tropes.
❖ The **patriarchy** is often revealed as both the cause and solution to many problems. Commonly, a link is made between the **political and personal**.
❖ Henry Siddons produced **an operatic adaptation,** *The Sicilian Romance or, The Apparition of the Cliffs,* which appeared on stage in 1794.

2.
Emily Brontë, *Wuthering Heights* (1847).

❖ Characterised as a doomed and tragic love story, the gothic elements of the novel are often forgotten in favour of the sweeping declaration of **transcendent love**.
❖ Desire has usurped **fear** and **brutality** has been civilised, not by the characters or the author, but by the reader.
❖ There are many adaptations of this novel, particularly for film and TV. Alison Case's *Nelly Dean* (2015) brings the **supernatural undertones** to the forefront, though **romance** is still a focus for the novel.

Dracula, first published in 1897, has never been out of print. The first edition (Figure 1) purposefully featured a yellow cover, which linked it to more transgressive works, including *The Yellow Book*, a journal published in the 19th century.

Figure 1: The 1897 edition of Bram Stoker's *Dracula*

LEFT: The third edition of *A Sicilian Romance* (1796).
RIGHT: An 1880 edition of *Wuthering Heights*, still advertised under the pseudonym Ellis Bell.
Both images used with the kind permission of Special Collections.

3.
Sheridan Le Fanu, *Carmilla* (1871).

❖ *Carmilla,* which **inspired Stoker's early drafts,** seems to have been left in the shadows of gothic history.
❖ In 1897, *The Standard* notes that Le Fanu's "ghastly story is almost forgotten".[1]
❖ Adaptations of *Carmilla* are **mostly comic.**
❖ The protagonist's tendency to **repress** her desire renders her narrative **unreliable**.

4.
Bram Stoker, *Dracula* (1897).

❖ The Victorian vampire serves as a warning about the **potential destruction of humanity**, whether from sexual discrepancy or racial threats.
❖ In 1897, *The Standard* suggests that *Dracula* "may possibly become a standing authority on vampires".[2]
❖ The **overlapping and epistolary nature** of the narrative renders it confusing and, at times, unreliable.

From Left to Right: Brontë Parsonage Museum; St Mary's Church, Whitby which features in *Dracula*; Whitby Abbey.

Summary

Gothic literature is known for its murky pasts, supernatural threats and curious creatures. Though Gothic literature may have reached its peak popularity in the **18th and 19th centuries**, it has not been relegated to the history books. Instead, certain texts have maintained their popularity and their literary afterlife is marked by **continued readership** and **numerous adaptations**. The gothic may have evolved but it still makes readers uneasy and will for a long time, playing with the fears that lurk within society and, often, humans themselves.

Tourist attractions such as the **Brontë Parsonage Museum** in Haworth and the **Dracula Experience** in Whitby take literature beyond the page. The genre continues to entertain **new generations** with each day. The face of fear may have changed, but gothic literature continues to **thrill and repulse** audiences with its strange combination of **danger and desire**.

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[1] Review of *Dracula*, *The Standard*, 22813 (11 August 1897), 2.
[2] Ibid.
Figure 1 http://www.bl.uk/collection-items/first-edition-of-dracula

Not so Iron Curtain?
International students in Gdynia (Poland)
during the communist period, 1945-1989

Researcher: Tadeusz (Tadek) Wojtych | Supervisor: Dr Bernhard Struck | School of History

Summary

Between 1945 and 1989, Poland had limited contacts with the outside world. The aim of this project was to investigate the demographics of international students in Gdynia (northern Poland), and to analyse the nature of their contacts with locals in the period. I discovered that merely 422 foreigners studied at Gdynia's universities and colleges over the course of these 44 years. At the Naval Academy, the authorities isolated international students from Poles, making closer contacts difficult. At the Maritime University, institutional barriers were fewer, which was reflected in closer personal interactions between Poles and foreigners. This shows how in an authoritarian state institutional directives affected private lives. Furthermore, international students came to Poland solely from socialist or Soviet-sympathising countries – the Iron Curtain stretching across Europe meant that among those 422 students no single "Westerner" could be found.

Context

In the years 1945-1989, Poland remained in the Soviet sphere of influence. The flow of people in and out of the country was strictly controlled and limited. Poland thus remained an ethnically, linguistically and religiously homogenous state. (1)

Despite difficulties with cross-border travel, a limited number of international students was admitted to Polish universities. This research project analysed the interactions between these students and the local people at two universities in Gdynia: the Maritime University, a civilian institution which trained marine professionals, and the Naval Academy, a military college of the Polish Navy.

Map 1. Gdynia in Europe divided by the Iron Curtain, 1945-1989. (2)

Research aims

This project had two main goals:
1. Demographics
   The exact numbers and countries of origin of international students in Gdynia had not been known before. The first aim of this research was to find out how many foreigners studied at Gdynia's universities and colleges, and where they came from.
2. Interactions
   The second aim was an analysis of the interactions between international students and the local people (Polish students, lecturers, ordinary people), both on the formal and informal level.
I have fulfilled both aims of this project.

Research methods

1. Previous studies
   This project was the first study of international students in Gdynia. To get an insight into research on expats living in Poland, I read a report from oral history interviews with foreigners currently living in Warsaw (Poland's capital city), and a sociological study of how international students adapted to life in Poland in the late 1980s. (3)
2. Lists of alumni
   To determine the numbers of international students in Gdynia, I read complete lists of alumni (containing thousands of entries, see picture 1) and singled out foreign-sounding names. Such method may seem absurd in present-day multicultural Europe, but the population of communist-era Poland was homogenous, so as a native speaker I was able to successfully identify the names of international students.

Picture 1. Two pages from a published list of alumni of the Naval Academy. (4)

3. Interviews and qualitative research
   I planned, scheduled and carried out 11 interviews with Polish alumni and lecturers. To find potential interviewees I used the "snowball sampling" method, where one interviewee would introduce me to another. Afterwards, I carried out a qualitative analysis of the interviews.
4. Archival research
   To analyse the official interactions between international students and the locals, I conducted archival research in the Naval Academy Archive, the Maritime University Archive, the Institute of National Remembrance, and the Oral History Archive. I had to obtain extra clearances, since some of the archival materials contained sensitive personal data or were related to matters of national security.

Demographics

Overall, 422 international students came to Gdynia in the period 1945-1989. They were almost evenly distributed between the two institutions:

The Naval Academy: 192 international students constituted 4.7% of the student body. 99% of them came from Libya and Vietnam, and arrived in 6 large groups – e.g. in the class of 1986 foreigners accounted for 44% of all students. Large numbers of compatriots encouraged international students to spend time within their own groups.

The Maritime University: 230 international students constituted 2% of the student body. They came from at least 7 countries and were more evenly distributed across different years and degree programmes. Fewer contacts with compatriots might have encouraged interaction with the locals.

Graph 1. Student body of the Naval Academy, 1945-1989. (5)

Graph 2. Student body of the Maritime University, 1945-1989. (5)
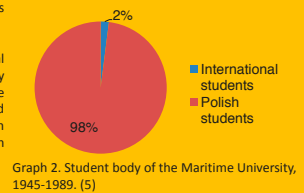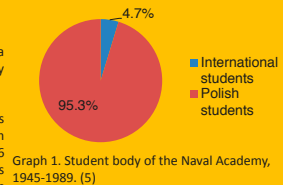
Interactions

	The Naval Academy	The Maritime University
Official	Military college with a high degree of institutional control. The authorities discouraged contacts between Polish and international students: - Separate halls of residence - Different curricula - Separate classes for Poles and foreigners - Libyan students followed their own military regulations All students met only during official events and training cruises.	Civilian institution which exercised less rigid control. The authorities neither encouraged nor discouraged contacts between Poles and international students: - Shared halls of residence - Same curricula - All classes taken together - All students were (officially) subject to the same rules Students were free to interact regardless of nationality; however, no contacts between Poles and foreigners were actively encouraged by the university.
Informal	- Polish and international students rarely spent free time together. - Even when Polish and Vietnamese students played football, the two national groups competed against one another. - Poles and foreigners entered closer relations only when they accidentally met outside of the school setting.	- Some friendships between Polish and international students were formed. - Holidays were sometimes celebrated together. - Polish alumni mention linguistic difficulties – probably because they actually did try to interact with their foreign colleagues.

Final Conclusions

- The Iron Curtain was visible in Gdynia – no international students came from the "West".
- Additional "Iron Curtains" existed between different states within the Soviet sphere – in many cases, international students were isolated from their Polish peers.
- The nature of private contacts was largely dependent on the official ones.

Future research

This project offers a number of perspectives for further development. These include:
1. Investigating how contacts between international students and foreigners affected the identity of both groups. This is especially relevant, as Poles had little or no contact with people from other cultures in the period 1945-1989.
2. A comparative study of universities in other cities and countries in Eastern Europe could shed new light on the uniformity of the Soviet bloc. Comparison of universities in the Soviet sphere and the "West" could provide more insight into the history of academia in general.

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Flag of Gdynia (top right): Bastian, Wikimedia Commons, Flaga Gdyni, 23 May 2006, <goo.gl/Z9GCC9> [11 September 2016].

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Laidlaw Undergraduate Internship in Research and Leadership Programme 2016

The role of Austrian Standard German in the teaching and learning of German as a foreign language

Research carried out at the University of Vienna

What is Austrian Standard German (ASG)?

➤ Standard variety of the German language as used in Austria

➤ Differs from German Standard German (GSG), which has historically represented the international standard, on all levels of language, although vocabulary has traditionally been seen as the main area of difference from GSG

➤ Examples of basic vocabulary differences include:

- January: *Jänner* (ASG), *Januar* (GSG)
- Stairs: *die Stiege* (ASG), *die Treppe* (GSG)
- Apricot: *die Marille* (ASG), *die Aprikose* (GSG)
- Cream: *Obers* (ASG), *Sahne* (GSG)

Project aims

➤ Investigation of the linguistic features of ASG in comparison with GSG

➤ Analysis of textbooks in regard to presence or lack of features of ASG and references to Austria in terms of cultural studies

➤ Analysis of academic studies of ASG and their historical development

➤ Assessment of the relationship between ASG and Austrian national identity

➤ Investigation of the role of ASG in Austria

➤ Study of the role of ASG in German teaching

Project summary

➤ This research provided an analysis of a large body of textbook material in terms of references to ASG and Austria, as well as identifying ASG to be an asset to teaching and posing concrete methods of using ASG in teaching.

➤ An analysis of ASG's role at home and abroad was provided, the relationship between ASG and Austrian national identity was explored and academic studies in the field were evaluated.

Austrian German

Conclusions

➤ High level of politicisation of the topic: ASG is intrinsically connected to Austrian national identity and the concept of the Austrian nation. To a large extent, it developed as part of a cultural movement to create a divide from Germany. Studies of ASG are also affected by the sensitive nature of this. ASG should be viewed in the context of its historical development and Austrian history.

➤ There is a low although increasing focus on ASG and Austria in German textbooks. The main focus is on vocabulary differences.

➤ There is a widespread perception in Austria and abroad of ASG as intrinsically 'less correct' than GSG and a perception of ASG as a dialect/regional form of German.

➤ Concrete pedagogical benefits for language learners of gaining at least a passive understanding of ASG can be identified.

➤ Approaches to ASG include maximising the authenticity of resources, helping teachers gain additional knowledge and thematising the concept of pluricentricity.

➤ Variation between GSG and ASG is present at all levels of language.

Key works for research

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The mechanism behind amino acid dating: what factors affect the racemisation of amino acids?

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Internship 2016

Objectives: → Use computational modelling to find the transition state of the deprotonation of the α-hydrogen of amino acids

→ Investigate the kinetics of different amino acids, chain length and temperatures

What is amino acid dating?

· Amino acids are abundant in nature as the building blocks of proteins
· In nature they only occur in one mirror image form, L-form (Laevorotatory)
· After death the amino acids slowly interconvert until a 50:50 mixture (racemic) is formed
· Extent of interconversion gives the age
· Variety of amino acids used to date bones including aspartic acid
· L-isoleucine to D-alloisoleucine (technically epimerisation) is used to date sediments and assess temperature changes if the date is already known
· Main advantage is its ability to date samples over 40,000 years old
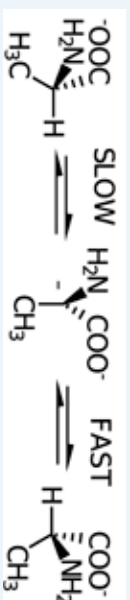
Figure 1— Bada mechanism of amino acid racemisation

Amino acid racemisation mechanism (As first proposed by Bada[1])

The mechanism is in two steps:

· First: the slow step where the α-hydrogen is abstracted to form a planar carbanion
· Second: the fast addition of the proton to reform the amino acid. Same chance of proton reattaching at either side, which causes racemisation
· As the first step is the slow, it is rate determining; the rate of the whole reaction depends upon in
· Experiments with D₂O and NMR have confirmed this mechanism
· Experiments show 1st order reversible kinetics hold

Technical details on quantum mechanical methods

· Density functional theory was used with Gaussian 09 software
· **M062X** and **6-31+G*** were chosen as the functional and basis set. **M062X** is a meta-GGA functional, is widely used and tested and is particularly good for main group thermochemistry. **6-31+G*** includes diffusion and polarisation into the approximations.
· Geometry optimisations were performed with a COSMO implicit water solvent model
· **QST2** and **QST3** keywords were used to generate and optimise the transition states
· The **freq** keyword was used to find the thermal correction to Gibbs free energy
· freqchk program was used to extrapolate the thermochemistry data to other temperatures
· The activation energy (Δ‡G°) and rate constant (k) were found using these equations:[2]
· Δ‡G° = (ε₀ + G_corr)TS − (ε₀ + G_corr)reactants
· k(T) = (k_BT/hc°)exp(−Δ‡G°/RT)

Methods

1. Five amino acids were chosen that are commonly used in amino acid dating
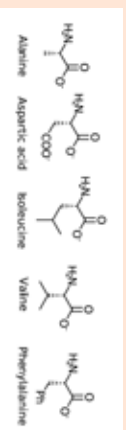
Figure 2—Five L-amino acids studied

2. Quantum mechanical simulations find the lowest energy structures of the amino acid with OH⁻ base and the carbanion with H₂O, the reactant and product of the reaction.
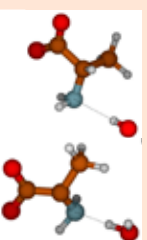
Figure 3—Amino acid with OH⁻ (left) and carbanion with H₂O (right)

3. A further calculation takes these two structures and finds the transition state structure, which is an energy maximum — the transition state determines the energy barrier
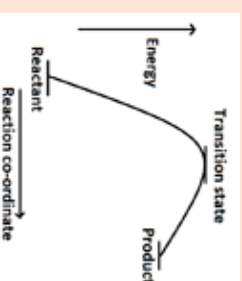
Figure 4—Free energy diagram showing the relative positions of the reactant, product and transition state

4. Frequency calculations find the vibrational modes of the structures and thermochemistry data. From this the activation energy and rate constant can be calculated.

5. Calculations repeated for N/C terminal dipeptides and tripeptides.

Results

1. Rate: free amino acids > dipeptides which agrees with experiments[3]
· Amino acids with electron donating alkyl groups (isoleucine and valine), have smaller conversion rates than alanine
· Temperature has a large effect on the rate constant. For free alanine rate constant was 2x bigger for an increase of 5 °C and for free phenyl alanine 3x
· Kinetic experiments quote values of ~130 kJ/mol for activation energy[1], values of 108-133 kJ/mol were calculated for free amino acids.
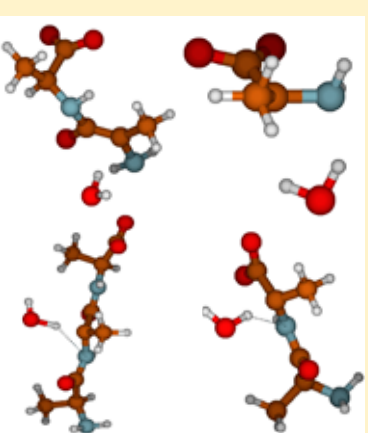
Figure 5—Structures of the transition states of free alanine (top right), N-terminal dialanine (top left), C-terminal dialanine (bottom left) and trialanine (bottom right)

Conclusions & further research

· Important insights into mechanism were gained and structure of the transition states were found
· Trends in chain length agree with kinetic experiments but the order of rate of individual amino acids do not. Actual reaction is a lot more complex as there are a mixture of chain lengths, competing reactions in a complex bone or carcaneous (within sediment deposits) matrix
· Further research will look at longer chain length and different amino acids. It could explore the difference between electron donating and electron withdrawing groups.

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[2] Thermochemistry in Gaussian http://www.gaussian.com/g_whitepap/thermo/thermo.pdf accessed 31/08/16
[3] G. G. Smith and G. V. Reddy J. Org. Chem., 1989, **54**, 19, 4529-4535

BUILDING BLOCKS
Generating sets of matrix semigroups

University of St Andrews

Research by **Botond Hajdara**, supervised by **Dr James D Mitchell**
and funded by the **Laidlaw Undergratuate Internship in Research and Leadership**
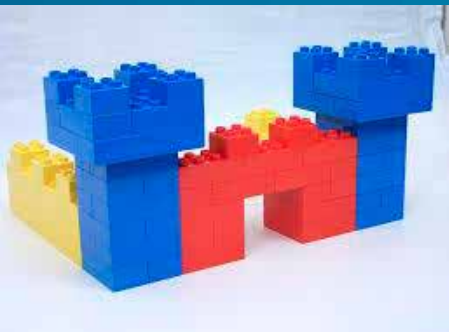
In addition to forming the bulk of mankind's scientific attempt at understanding itself, mathematics also embodies the most human of longings: we are gifted with the intelligence which forces us to try and comprehend concepts and questions well beyond the scope of our own finite lives. Naturally, one of the fundamental scientific principles is that of making things as compact as they can be in an attempt to convey information in the most efficient way. William Blake seems to have grasped what lies at the centre of this strive; indeed what scientists try to do is

„To see a world in a grain of sand,
And a heaven in a wild flower,
Hold infinity in the palm of your hand,
And eternity in an hour…"

This project, albeit on a small scale, is an example of the above.

PRELIMINARY CONCEPTS

- In mathematics, a *set* can simply be thougth of as a collection of objects which share certain characteristics.
- A *binary operation* on a set is an operation which combines two elements of the set and gives an element of the set as a result.
- A binary operation is *associative*, if it does not matter in what order we carry out the operations when combining three or more elements with this operation.
- A set of objects together with an associative binary operation is formally refered to as a *semigroup*.
- An *nxm matrix* is an n-by-m array of objects, usually numbers.
- A subset B of a semigroup S is said to be a *generating set* for, S if all elements in S are possible to obtain from those in B by combining them using the operation.
- The reason for studying generating sets stems from the above principle: the characteristics of the foundamental generators or building blocks will determine those of all objects in our set, but there are far fewer of the former.

AIMS AND METHODS

- The aim of the project was to identify generating sets for the semigroups of 2x2 matrices with entries from the sets of the natural numbers ($\mathbb{N}$), the integers ($\mathbb{Z}$) and the integers *modulo n* ($\mathbb{Z}/(n)$). The latest refers to the integers' remainders upon division by n; so $\mathbb{Z}/(3)$ is simply {0, 1, 2}.
- For instance, $M = \begin{pmatrix} 1 & 2 \\ -7 & 52 \end{pmatrix}$ is one matrix with entries from $\mathbb{Z}$.
- In the semigroup of these matrices, matrix multiplication is the binary operation.
- To put it simply: the question is which 2x2 integer/natural matrices are essential, if we want to build all of them by means of matrix multiplication.
- Being a tedious, but simple computation, matrix multiplication lends itself naturally to using computers.
- Hence my project composed of answering the theoretical questions on paper and running tests on the computer to validate these proofs or identify outliers or problems or, occasionally, to hint at the next step.

PROCEDURE AND SKILLS EARNED

- Firstly, a few essential matrices were identified, which have structural roles. For instance, the matrix $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ can be used to exchange the rows or columns of another matrix. Another group is that of diagonal matrices with *prime number* entries, since these are difficult to obtain due to the nature of primes.
- Computer tests were set up to determine what matrices were generated by the above over $\mathbb{Z}/(n)$ and I sought a general proof for matrices over $\mathbb{Z}$.
- While the tests were promising, it was realised that certain types of matrices were not possible to generate from others over the naturals, and so it became clear that the problem was very different in that case. While over $\mathbb{Z}/(n)$ and $\mathbb{Z}$, there was hope for a general proof being obtainable, it seemed like over $\mathbb{N}$, I had to settle for identifying certain problematic groups.
- The key skills acquired were that of persistence and the appreciation of computer tests in suggesting trends and hinting at possible theory in addition to being means of verification.

RESULTS AND THE FUTURE

- Eventually it was shown that the set A of 2x2 matrices below generates all 2x2 matrices over $\mathbb{Z}/(n)$.
$A = \left\{ \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}, \begin{pmatrix} 0 & 1 \\ 1 & 1 \end{pmatrix}, \begin{pmatrix} p & 0 \\ 0 & 1 \end{pmatrix} \middle| \text{ where } p \text{ takes the value of primes less than } n \right\}$
- Furthermore, it was shown that the set B of 2x2 matrices below generates all 2x2 matrices over $\mathbb{Z}$.
$B = \left\{ \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}, \begin{pmatrix} 0 & 1 \\ 1 & 1 \end{pmatrix}, \begin{pmatrix} p & 0 \\ 0 & 1 \end{pmatrix}, \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} \middle| \text{ where } p \text{ takes the values of all primes} \right\}$
- Some important sets of matrices were shown to be impossible to generate from others by means of matrix multiplication over $\mathbb{N}$.
- The natural continuation of the project would be to try and identify all sets in the latter category and to thus formulate a conjecture about a possible generating set for all 2x2 matrices with entries from $\mathbb{N}$.

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An unexpected role for MG23 in Heart Failure

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School of medicine.
Funded By the Laidlaw internship programme.

Introduction

Heart failure is an incurable disease that is one of the leading causes of death worldwide (1) affecting over half a million people in the UK (2). It is the final stage of a number of heart diseases. It involves the failure of the heart to work effectively as a pump due to a number of underlying causes. Mitsugumin 23 (MG23) is a Ca^{2+} permeable ion channel that is found in both heart and skeletal muscle(3). It is located in the membrane of the sarcoplasmic reticulum (SR). This challenges the idea that ryanodine receptors are the only pathway for the release of Ca^{2+} from the SR. Although the role of MG23 is not fully understood, it has been shown to be implicated in programmed cell death (apoptosis (4)) ,and recent data from our group suggest that MG23 may play a role in enhanced SR Ca^{2+} leak.

Ca^{2+} from SR causing contraction of heart muscle

Sarcoplasmic reticulum

Zn^{2+} increases opening of MG23
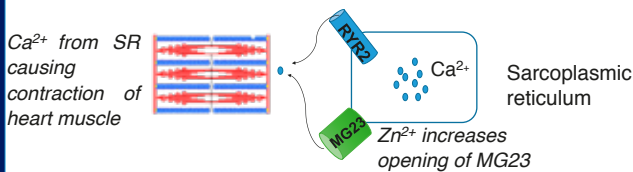
Both programmed cell death and Ca^{2+} dysregulation are known to occur in the failing heart highlighting a fundamental role for MG23 in heart failure. Furthermore, increased intracellular Zinc (Zn^{2+}) has also recently been associated with heart disease and work from our group has shown that pathophysiological levels of Zn^{2+} increase the activity of MG23. Taken together these data suggest that MG23 may play a fundamental role in heart failure.

There are limited treatments for heart failure and most modern therapies are thought to work by modulating the gating of the type-2 ryanodine receptor (RyR2) to reduce SR Ca^{2+}-leak. However in heart failure there is a RyR2-independent contribution, which is poorly understood.

Hypothesis and aims

We hypothesise that both the protein expression and the activity of MG23 is upregulated in heart failure causing some of the reported Ca^{2+} leak from the SR. We suggest that therapeutic compounds which reduce SR Ca^{2+} leak in heart failure may not work exclusively via RYR2 but also through inhibition of MG23.
The aim of the study was to :
1. Investigate the effect of Compound X, a drug thought to reduce SR Ca^{2+} leak on MG23 gating

Experimental procedures

Sarcoplasmic reticulum vesicles were isolated from guinea pig legs and MG23 ion channels within the SR were incorporated into lipid bilayers. Single channel currents were measured under voltage clamped conditions. Bilayers were clamped at 0mV which is the reported membrane potential of the SR(5).

A schematic diagram of a *in-vitro* bilayer system
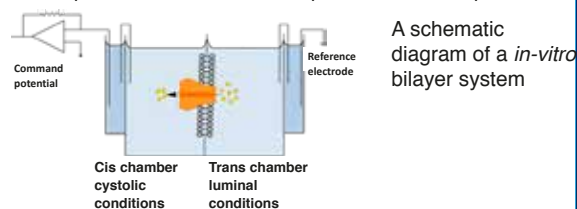
The *cis*-chamber (mimicking the cytosol of the cell) was filled with 1ml of TRIS/HEPES whilst the *trans*-chamber was filled with 1 ml of Calcium glutamate(mimicking the lumen of the SR within the cell) , compound X was applied to the *cis* chamber. Then Zn^{2+} within the range 100 pM – 100 nM was added to the cis-chamber as $ZnCl_2$.

Open probability (P_o) was determined over 3 minutes of continuous single channel current recordings made WinEDR 3.05 software (John Dempster, Strathclyde university, UK). These recordings were then analysed using TAC 4.2.0 (Bruxton Corporation, Seattle, USA).

Compound X alters MG23 gating

After addition of compound X to the cystolic face of MG23 there was a large reduction in channel P_o to almost 0 (figure 1). This suggests that compound X alters the gating of MG23.

1A

1B
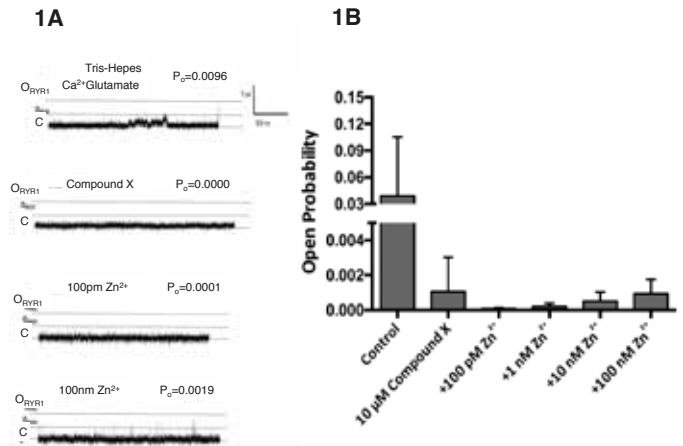
1A = Representative single- channel traces of MG23. Application of 10mM compound X reduces MG23 activity compared to control. Elevation of Zn^{2+} to 100 nM increased channel open probability although this was not statistically significant.
1B= A bar chart indicating a trend in mean open probability of MG23 in response to compound X and Zn^{2+}. Data are shown as mean ±SD n=4.

Discussion

In this study we show for the first time that compound X alters MG23 gating. This suggests that compound X's protective effect in heart failure may be due to inhibition of MG23. This raises the possibility that MG23 may be a potential target for future treatments for heart failure.

However these findings have clear limitations. Although the pattern of reduced Po on application of compound X to MG23 was shown across 4 separate experiments these changes were not statistically significant. This is due in part to the variable Po for the controls, and the fact that RYR2 was also present in the bilayers making analysis of MG23channel activation difficult. In future studies, these experiments could be repeated with purified MG23 ion channels in order to confirm this effect. This would mean only MG23 ion channels would be incorporated in the bilayer making analysis of the collected data much easier.

Summary

MG23   +Compound X

Compound X when applied to MG23 prevents channel openings.

Ca^{2+} Ca^{2+}
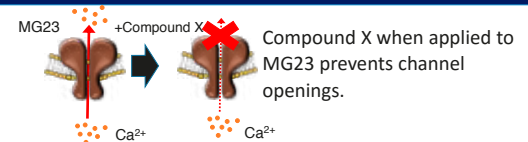
- Heart failure is a currently incurable disease. With a number of causes
- MG23 has been implicated in a number of the underlying causes of heart failure
- Compound X blocks MG23 even in the presence of Zn^{2+}. Compound X may be a potential treatment for heart failure.

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How hot can the Earth get?

Reconstructing past CO_2 concentrations during the Eocene "hot house" climate of Earth, 42-52 million years ago

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STAiG
St Andrews Isotope Geochemistry

Introduction

• **The key to future is the past**: to better understand and predict the effects of climate change we can study analogous events in Earth's rock record.

• Here we focus on the Eocene "hot house climate", 42-52 million years ago.

• Previous estimates of past CO_2 over this time period are sparse, varied and show little coherent trend.

• Reconstructing past CO_2 can be done in a variety of ways. Here we use the Boron isotope composition of fossil shells called foraminifera, calcifying protists that live on the sea floor. This reflects the pH and CO_2 chemistry of the sea water in which these organisms grew.
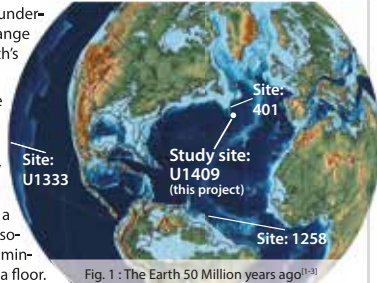
Fig. 1 : The Earth 50 Million years ago[1-3]

Site: 401
Site: U1333
Study site: U1409 (this project)
Site: 1258

Methods

IODP Expedition 342
Site 1409
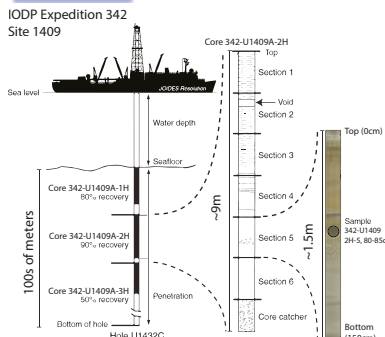
Fig. 2 : Coring procedure for all sites in the Ocean Discovery programme[4][5], a hydraulic piston repeatedly rams a 9.5m steel pipe into ocean sediment beneath it, and this sediment core is then retrieved. This technique allows for 100ms of coring

• Ocean sediments from the north west Atlantic (fig. 1, site U1409) were collected in 2014 by the Integrated Ocean Discovery Program drill ship (fig. 2).

• Samples of ocean sediment were requested, washed (>63µm to remove clays), dried and sieved into vials.

• Foraminifera of select species (fig. 3) were picked from the dried sediment and stored in separate slides prior to analysis.

• Analyses were conducted in the STAiG lab, a world-leading clean geochemistry facility (fig. 4&5) following methods in references 6 & 7.

Nuttallides Truempyi, Infaunal species (lives within ocean sediments) (Nuttall, 1930)

~1cm Cibicidoides Eocaenus Epifaunal species (lives on the top of ocean sediments) (Gümbel, 1868)
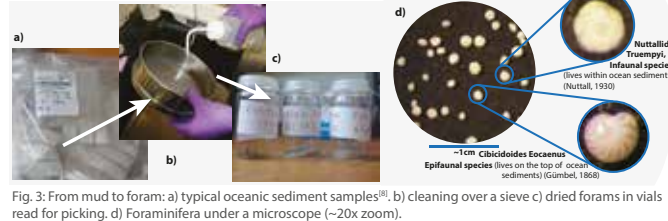
Fig. 3: From mud to foram: a) typical oceanic sediment samples[8]. b) cleaning over a sieve c) dried forams in vials read for picking. d) Foraminifera under a microscope (~20x zoom).

• Foraminifera were cleaned in ultra pure water, ultrasonicated to remove clay contaminants, cleaned in oxidative solution and underwent weak-acid leaching prior to dissolution.

• Aliquots of dissolved foraminiferal samples were then run for trace metal analysis in a Thermo/Finnigan Agilent mass spectrometer.

• An additional aliquot of sample was then purified via ion exchange chromatography to extract boric acid for analysis on a Thermo Scientific Neptune Plus high-resolution multi-collector inductively coupled plasma mass spectrometer (HR MC ICP-MS, fig. 4)

Left - Fig. 4: The Thermo Scientific HR MC ICP-MS at the STAiG lab
Right - Fig. 5: A view into one of the ultra-clean STAiG prep. labs

Results

• **$\delta^{18}O$ data**[9-10] (fig. 6a) reflect temperature and ice volume. Shows warm conditions from 53-48, and cooling from 48-41Ma.

• **Mg/Ca** (fig. 6b): paleo-temperature proxy showing warmer conditions 53-48 and a cooling trend from 48-41Ma, corroborating $\delta^{18}O$ data.

• **Al/Ca** (fig. 6c): low values indicate minimal clay contamiantion, supporting a robust $\delta^{11}B$ signal.

• **Mn/Ca** (fig. 6d): proxy for secondary alteration, shows little correlation with $\delta^{11}B$ meaning our data is unlikely to have been affected by secondary processes.

• **$\delta^{11}B$** (fig. 6e): reflects past-pH and pCO_2. Low values from 53-48Ma shows low pH & high CO_2. Increasing $\delta^{11}B$ from 48-41 implies higher pH and lower CO_2, there is a small offset between our data and equitorial data, but trends are similar.

Discussion

Determination of past atmospheric CO_2 concentrations from boron isotopes was two step:

• pH was calculated from boron isotope ($\delta^{11}B$) data, using standard equations and $\delta^{11}B$ of sea water as 38.45 ±0.5‰ from Anagnostou 2016. These pH values are far more acidic than modern sea water (fig. 8c).

• Relationship between past-pH and CO_2 at the study sites were calculated from the cGenie climate model (fig 7a-b) runs at different atmospheric CO_2 concentrations. These values were used to create the simple calibration (fig. 7c) of pH to model pCO_2 from the $\delta^{11}B$ data.

Fig. 6: Combined trace element and boron isotope data from this site and from equatorial Atlantic site 1258/1260

Trace Element data
● Infaunal data
◆ Epifaunal data   Site U1409 (this study)
● Epifaunal data   Site 1258/1260

Boron isotope data (foram)
Epifaunal species only
● Site 401   ● Site 1258/1260   □ Site U1409   □ Site 1258/1260   ◇ Site U1333

a) Surface Ocean pH   b) Ocean pH depth transect   c) Ocean pH at site U1409 under model atmospheric CO_2 ppm

$pCO_2 = 8.76(pH)^{0.036}$
$R^2 = 0.99$

Fig. 7a-b) cGenie Earth System sample model output data   & c) cGenie derived pH-CO_2 calibration

Conclusions

• First coherent high resolution CO_2 reconstruction during the Eocene "hot house" climate.

• Average CO_2 levels were between 2500 - 3000ppm between 53-49Ma, then dropped to 800 -1200ppm between 47-41Ma

• Drop in CO_2 to 800ppm starts a decrease in temperature throughout the Eocene (blue section, fig. 8). CO_2 remains the major driving force for climate change even during extremely different climactic conditions. The Earth could reach similar atmospheric CO_2 levels (~1000ppm) to the "hot house" by 2070 if emissions are not reduced[11].

• The drop in CO_2 is not reflected in rates of organic carbon burial ($\delta^{13}C$, fig. 8b). This suggests the CO_2 change must be driven by another means, such as increased silicate weathering or reduction in volcanic outgassing.

• $\delta^{13}C$ change must be driven by a process that strongly alters $\delta^{13}C$ but not CO_2, such as methane clathrate formation.

• Further work should continue to improve benthic pH - CO_2 calibrations, and extend the current $\delta^{11}B$ past-climate record.

Fig. 8: Combined climate proxy data, reconstructed paleo-pH and atmospheric CO_2 data from 30-60Ma.

pH   ● Epifaunal data: Site U1409   ● Epifaunal data: Site 1258/1260
Boron proxy paleo-CO_2 reconstructions
■ Pearson 2009   ◆ Anagnostou 2016   ◇ Edgar 2015
○ Pearson 2000   ● Site U1409 & 1258/1260

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Polarisation in photon Bose-Einstein condensates

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Laidlaw Undergraduate Internship in Research and Leadership Programme 2016

Motivation

Bose-Einstein condensation is an exotic state of matter in which a gas of bosons all occupy a single state, displaying quantum phenomena at macroscopic scales. It was recently achieved for the first time with photons, in a laser-pumped dye-filled microcavity at room temperature [5]. Experiments at Imperial following [6] indicate that the way light is polarised changes on condensation. While a photon condensation model exists [3][4][2], there is no previous work regarding its polarisation. Thus to describe this phenomenon, the theory was developed to include polarisation.

Experiment description

System diagram (from [4]):
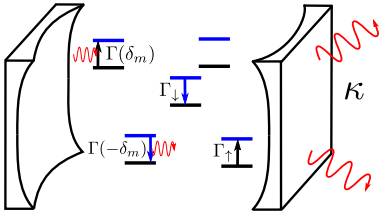
κ	:	cavity photon loss
$\Gamma(\delta_a)$	:	molecular absorption of photons
$\Gamma(-\delta_a)$	:	molecular emission of photons
$\Gamma_\uparrow$	:	pumping
$\Gamma_\downarrow$	:	fluorescence

Original equations

The rate equations without polarisation are:

$$\frac{\partial}{\partial t} n_a = -\kappa\, n_a + \Gamma(-\delta_a)\left(n_a + 1\right) N_\uparrow$$
$$\qquad - \Gamma(\delta_a)\, n_a \left(N - N_\uparrow\right) \quad (1)$$

$$\frac{\partial}{\partial t} N_\uparrow = -\Gamma_\downarrow N_\uparrow + \Gamma_\uparrow \left(N - N_\uparrow\right) + \sum_{a=0}^{\infty} g_a \Big\{$$
$$\Gamma(\delta_a)\, n_a \left(N - N_\uparrow\right) - \Gamma(-\delta_a)\left(n_a + 1\right) N_\uparrow \Big\} \quad (2)$$

n_a	:	a^{th} photon mode population
$N_\uparrow$	:	molecular excited state population
g_a	:	degeneracy factor ($= a + 1$)
N	:	total number of molecules

Polarisation extension

The equations were recast to include the angular dependence of the molecule-photon interaction:

- $n_a \to n_a^\sigma$
- $N_\uparrow \to N_\uparrow(\theta, \phi)$
- introduce molecular angular diffusion term

with:	σ	:	polarisation state
	D	:	diffusion coefficient
	θ	:	polar angle
	ϕ	:	azimuthal angle
	χ	:	pump polarisation angle

Equations with polarisation

$$\beta^\sigma(\varphi) = \begin{cases} \cos^2(\varphi) & \text{for } \sigma = x \\ \sin^2(\varphi) & \text{for } \sigma = y \end{cases} \quad (3)$$

$$\frac{\partial}{\partial t} n_a^\sigma = -\kappa\, n_a^\sigma + (n_a^\sigma + 1)\,\Gamma(-\delta_a) \int_0^\pi d\theta\,\sin(\theta) \int_0^{2\pi} d\phi\,\sin^2(\theta)\,\beta^\sigma(\phi)\, N_\uparrow(\theta, \phi)$$
$$- n_a^\sigma\,\Gamma(\delta_a) \int_0^\pi d\theta\,\sin(\theta) \int_0^{2\pi} d\phi\,\sin^2(\theta)\,\beta^\sigma(\phi)\left(N - N_\uparrow(\theta, \phi)\right) \quad (4)$$

$$\frac{\partial}{\partial t} N_\uparrow(\theta, \phi) = -\Gamma_\downarrow N_\uparrow(\theta, \phi) + \sum_{\sigma=(x,y)} \Bigg\{ \beta^\sigma(\chi)\,\Gamma_\uparrow\,\sin^2(\theta)\,\beta^\sigma(\phi)\left(N - N_\uparrow(\theta, \phi)\right)$$
$$- \sum_{a=0}^{\infty} g_a \bigg[\Gamma(-\delta_a)\,(n_a^\sigma + 1)\,\sin^2(\theta)\,\beta^\sigma(\phi)\, N_\uparrow(\theta, \phi) + \Gamma(\delta_a)\, n_a^\sigma\,\sin^2(\theta)\,\beta^\sigma(\phi)\left(N - N_\uparrow(\theta, \phi)\right)\bigg]\Bigg\}$$
$$+ D\left[\frac{1}{\sin^2(\theta)}\frac{\partial^2}{\partial\phi^2} + \frac{1}{\sin(\theta)}\frac{\partial}{\partial\theta}\left(\sin(\theta)\frac{\partial}{\partial\theta}\right)\right] N_\uparrow(\theta, \phi) \quad (5)$$

Solving the equations

A Python program was written to solve the rate equations:

- Parameters were set as in [2].
- D was set matching experimental data [1].
- The equations were intractable in angular space, so $N_\uparrow(\theta, \phi)$ was expressed as a sum of spherical harmonics with coefficients $N_{l,m}$.
- To test the simulation, steady-state spectra were plotted and found to match expectations:
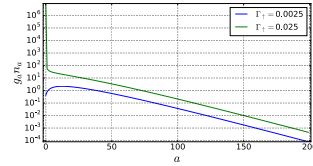
Population behaviour
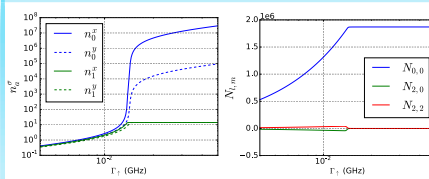
A clear threshold is seen with exotic multiple mode condensation.

Above threshold, $N_{0,0}$ (related to $N_\uparrow$) clamps and higher orders (reflecting molecule orientation distribution) suppress.

Polarisation response

Polarisation degree:

pump	:	$P_{in} = \cos(2\chi)$
cavity photons	:	$P_{out} = \frac{x-y}{x+y}$
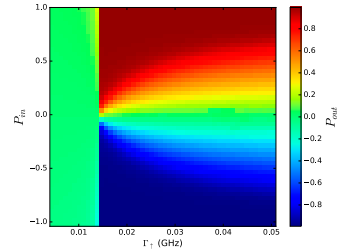
With respect to threshold,

Below:	Weakly polarised photon gas; spontaneous emission allows molecule rotation time.
Just above:	Strongly polarised condensate as single condensation mode.
Far above:	P_{out} follows P_{in}; stimulated emission suppresses diffusion.

Summary

An existing theoretical model of photon Bose-Einstein condensation in a dye-filled microcavity was extended to include polarisation and a computational simulation of the system produced to investigate its polarisation behaviour.

The model generally predicts expected results with some interesting exotic behaviour, furthering our understanding of photon condensation and its potential application. Some unusual outcomes have motivated a project extension.

Future outlook
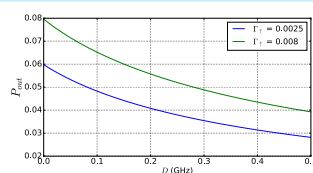
A project extension will be undertaken to investigate some curious results, such as P_{out} remaining small for a fully polarised pump when molecular angular diffusion is suppressed.

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The Role of HLA-B27 in Ankylosing Spondylitis

Katie Munro

SCHOOL OF MEDICINE

HLA B27

Ankylosing spondylitis (AS) is a type of arthritis that primarily affects the spine, eventually causing the vertebrae to fuse together. It is painful and there is no current cure, with treatment essentially relying on just pain relief or drugs that dampen the ability of the immune response to cause inflammation.

Over 90% of patients with AS express a molecule in their immune system called HLA-B27(Bowness 2015), which normally helps you detect and eliminate virus infected cells. Why HLA-B27 also causes AS in some people is not fully understood. One current theory is because HLA-B27 is prone to mis-fold inside some immune cells this stresses the cells and causes them to promote inflammation. Therefore, treatments and drugs that influence the mis-folding of HLA-B27 may be of beneficial clinical use.
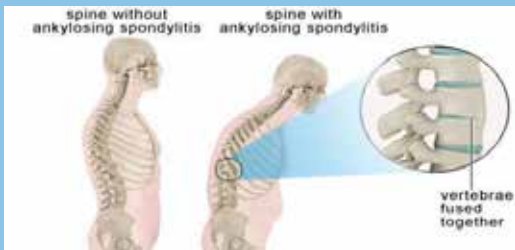
(image from www.arthritiswa.org.au)

In this study we have used drugs which are already used in AS patients, to see if they influence HLA-B27 mis-folding. If successful, we could then specifically tailor their future use to prevent mis-folding of HLA-B27 during disease flares to improve patient welfare.

Techniques Used

Plot P03, gated on P01.R1

Negative Control – unstained cells
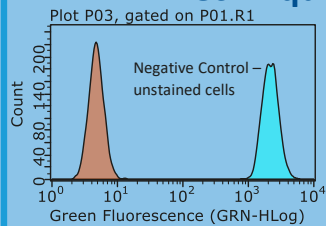
Cells stained with antibody which detects HLA-B27

Green Fluorescence (GRN-HLog)

Flow cytometry uses fluorescently tagged antibodies to label cell surface proteins of interest which are then detected by lasers. Looking at the graph it is possible to see that Hela.B27 cells express high levels of B27. Data was obtained with an anti-HLA-B27 antibody (blue) which shows the cells are 100% positive for HLA-B27 (unstained cells shown in light salmon)

Immunoblotting

Immunoblotting first separates proteins by size on a gel matrix, transfers the proteins to a nitrocellulose membrane, then uses specific anti-B27 antibodies to detect the folded and misfolded HLA-B27, which differ in size.

Hela B27 cells were set up in cell culture with a variety of different drugs and concentrations. → The cell proteins were broken down and the nuclear contents such as DNA removed → Cellular proteins are run on a gel and transferred to nitrocellulose paper ↓

The intensity and size of each band corresponds to the amount of protein present ← Correctly folded and misfolded B27 as well as the housekeeping protein all have different molecular weights so can all be seen on the same image ← The cell proteins are stained with an anti-HLA-B27 antibody and an anti-housekeeping protein to measure cell toxicty

Celecoxib

Celecoxib (CXB) is currently used to treat ankylosing spondylitis. Celecoxib reduces inflammation by decreasing availability of two main pro-inflammatory molecules.
At higher doses than currently used clinically celecoxib has been shown to clear misfolded proteins through by inducing an endoplasmic reticulum stress response(Pyrko et al. 2011). The stages of ER stress response are shown below:

Upregulation of chaperone proteins such as binding immunoglobulin protein (BiP) which ensure correct protein assembly and folding → Endoplasmic reticulum associated protein degradation (ERAD) is also activated which targets misfolded proteins for degradation by proteases → However, if the stress is too extreme or prolonged then cell death occurs.
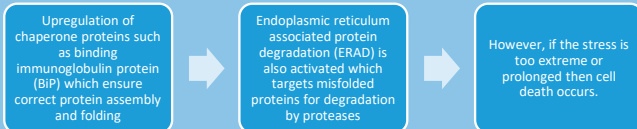
If a balance can be found it may be possible to induce an ER stress response which is enough to clear misfolded B27 proteins but not enough to cause cell death.

Cell Viability Test

Toxicity of celecoxib is shown in the graph right. This shows celecoxib is not toxic at levels used clinically. 10µM celecoxib does result in a decrease in cell numbers but it is not significant. Some of toxicity at high concentration comes from the DMSO which is the reagent the drugs are dissolved in. To combat this higher concentrations of drugs were prepared so less DMSO was added to cell cultures.
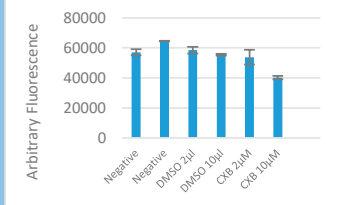
Immunoblot

This experiment looks at the effect of celecoxib on B27 expression. 10µM celecoxib results in a decrease in both correctly folded and misfolded B27 expression when compared to both the negative and DMSO controls. There is not a significant decrease in the housekeeping protein which indicates the cells are still healthy.

Building on these results and the low toxicity of celecoxib, further experiments could be done to look at the effect of higher concentrations of celecoxib on HLA-B27 expression.

Sulfasalazine

Sulfasalazine is used to treat chronic inflammatory diseases. It is a mild immunosuppressive agent and an anti-inflammatory. Sulfasalazine is broken down by bacteria in the body to form sulfapyridine (SP) and 5-amino salicylic acid. (5-ASA)(Bird 1995). It is unclear which component of sulfasalazine is active in ankylosing spondylitis.

Cell Viability Test

The graph left shows the toxicity of sulfapyridine and 5-amino salicylic acid. Both drugs are only toxic above levels used clinically. Looking at the lowest concentration of each drug and comparing it to the 4µl DMSO control it is clear that 2mM of both sulfapyridine and 5-amino salicylic acid are only very slightly toxic. 5mM is slightly more toxic but still usable. 10mM of the drugs is too toxic and results in the death of almost all the cells in both cases although some of this may be due to DMSO which is used to dissolve the drugs in.
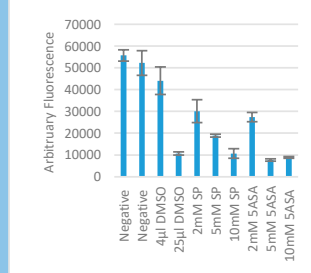
Immunoblot

This experiment looks at the effect of sulfapyridine and 5-amino salicylic acid on Hela B27 cells. In all cases the expression of both forms of B27 decreases significantly. The dimer expression decreases more than the monomer expression indicating a slight specificity towards misfolded forms of B27. The house keeping protein does not significantly decrease in either of the preparations with sulfapyridine alone. It does notably decrease with 5-amino salicylic acid indicating a slight toxicity.

Moving forward from these results, it would be good to screen all currently used drug therapeutics used in AS in these assays, then to determine in detail what cellular pathways are being activated that leads to the removal of misfolded HLA-B27. Based on this we could then perform clinical trials to improve targeted therapy on drug use in AS.
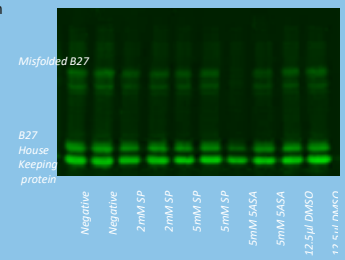
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How do cells fight off intracellular parasites?

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School of Medicine

Introduction

**Microsporidia:
Opportunistic intracellular parasites**

Causes:
- Chronic infections in the gut lining of up to half the human population
- Devastating infections in AIDS, and immune-suppressed patients
- Bee colony collapse disorder
- Salmon disease
- Infections in silkworms and domestic animals.

Trachipleistophora hominis
- Isolated from skeletal muscle on an AIDS patient
- Causes myositis, a severe muscular pain and wasting immobilising condition.
- The current treatment is Albendazole.

Interferon gamma induces

IRG proteins to accumulate on

Parasite containing vacuoles (PVs)

Causing vacuole to break down and death of parasite

Autophagy proteins

Such as ATG5 and ATG3 (which are needed to deliver the IRG proteins to the PVs)

Are important in the formation of the membrane which engulfs intracellular parts of the host cells (which may include the parasite)

To which lysosomes attach

And allow for digestion of contents

Figure 1. A flow diagram to show the basic mechanisms involved in the two types of innate immunity that we are interested in. The IRG resistance system and the Autophagy pathway.

Autophagy in an intracellular process that was discovered as a pathway for **recycling parts of the cell during starvation** and has been shown to **play a key role in neurodegeneration, cancer, and in providing our innate immunity against certain pathogens**. It has a lot of regulators, but mainly starvation and mTOR suppression activate the pathway. Of the 30 or so ATG related proteins, ATG5 and LC3 are key proteins involved in the process. LC3 localisation has been studied in T. Hominis infections, however ATG5 has not.

The **IRG system**, a highly selective innate immunity process that only **resists pathogens that bypass being ingested by the cell**, as IRG proteins bind to vacuolar membranes only in the **absence of a host derived inhibitor** that is present on the ingested membranes, but not on invaginated plasma membrane.

Objectives

① To test whether interferon application affects the infection number or its rate in human pathogenic _Trachipleistophora hominis_ (**T. hominis**) infections
② To test whether components of autophagy are activated using markers (such as ATG5 and LC3) of the process
③ To test whether autophagy is a regulator of parasite infection/survival as assayed in continuously growing cultures by stimulating or inhibiting it using Rapamycin and 3MA respectively.

Results

□ **Levels of infection in smaller parasite groups increased, and infection decreased in larger parasite groups when autophagy was stimulated using Rapamycin.**
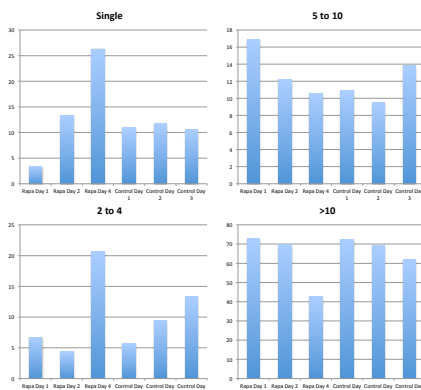
Figure 2. Graphs to show the effect of Rapamycin on various meront staged infected RK cells. Infected RK cells were treated with 20mM or 40nM Rapamycin dissolved in DMSO and these cells were then fixed with 4% PFA, and stained using GIEMSA at 24hr, 48hr or 96hr, and then mounted onto slides ready for counting using systematic uniform random band scans of the entire length of the slide from the starting point.

□ **Autophagy protein ATG5 is found close to the early stages (meronts) of _T. hominis_ parasites in infected rabbit kidney cells.**
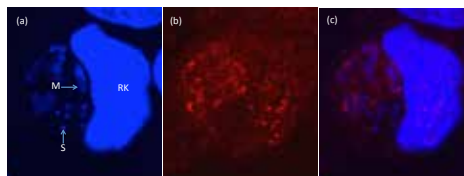
Figure 3. (a) Blue Immunofluorescence of infected rabbit kidney (RK) cells with T.Hominis parasites meronts (M), TH spores (S). (b) Red layer showing ATG5 localisation. (c) Both layers together. RK13 cells with TH infection were cultured in Gibco glutaMAX DMEMa (10% foetal calf serum, 100 U/ml penicillin/streptomycin, ThermoScientific, UK) at 35C, 5% CO2.

□ **Autophagy protein LC3 is not found close to _T. hominis_ parasites in infected rabbit Kidney cells, however it is able to take part in autophagy.**
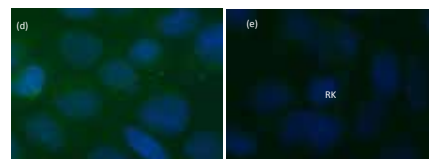
Figure 4. Immunofluorescence of uninfected rabbit kidney cells RK nuclei (RK), with LC3 antibody in green. (d) Starved RK cells and (e) Unstarved RK cells. Starved RK cells show bright specks of green indicating that autophagosomes are formed. The antibody does in fact work and autophagy is up regulated! Sub confluent cells (grown on 25mm glass coverslips) in complete medium or serum/amino acid poor medium (4 hours) were fixed for fluorescence using 4% PFA. Slides were stained using antibodies against LC3 and followed by secondary antibodies conjugated to mouse fluorochrome.

□ **Preliminary results showed that infection levels decreased when infected RK cells were treated with Interferon.**

Human Interferon was applied for 0hr, 24hr, 48hr or 96hr and at 200U/ml. Cells were fixed and processed for light microscopy. The numbers of early forms (meronts) were counted and staged using systematic uniform random scans.

□ **Levels of infection are increased when autophagy was blocked using 3MA.**
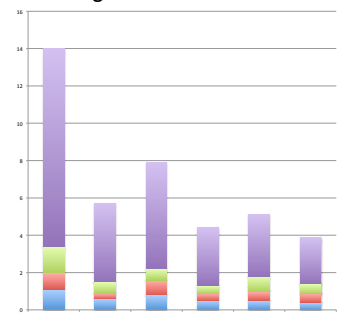
Figure 5. RK cells were infected with TH, and treated with 3MA and fixed after 24hr, 48hrs, and 96hrs. The graph shows different parasite stages as a percentage of total infected RK cells on Y-axis.

Acknowledgements

University of St Andrews
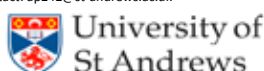
Summary

- The autophagy component **ATG5**, but not LC3, is **recruited to the early stages of the parasite T. hominis** (which causes microsporidiosis in AIDS).
- **Infection rates can be altered by autophagy activators and inhibitors.**
- The results point to autophagy playing a role in combating _T. hominis infections_, and so paves way for **new therapeutics development for _T.hominis_ infections.**

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Hydrogen Bonded Supramolecular Assemblies of Luminescent Iridium Complexes

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1. INTRODUCTION

Lighting appliances are the second highest consumer of energy in buildings and arguably the most inefficient.[1] Organic light emitting diodes are seen as a potential step along the road to tackling the issue of energy inefficiency, and in turn energy consumption. This project delves into an area of promising research on phosphorescent Iridium complexes, with particular focus on the potential hydrogen bonding interactions between emissive complexes and the prospect of white light emission.

2. WHY STUDY THE INTERACTION BETWEEN THESE COMPLEXES?

Prior research by Wenger *et al.*[2] demonstrated that complexes containing biimidazole ligands, such as complexes B and C, formed a salt bridge with benzoate in solution. This resulted in a red shift in the observed emission. Here we investigate a supramolecular system in which a similar interaction could be observed between the diacid ligand of complex A and the biimidazole ligand of complexes B and C, potentially affecting the wavelength of light emitted by these complexes.
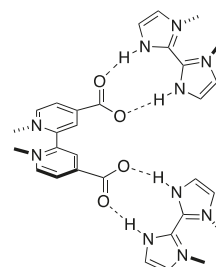
Hydrogen bonding interaction between diacid ligand of complex A and the biimidazole ligand of complexes B and C

3. PROCEDURE

The emission spectra of complex A, B and C were measured in the interval 430 – 800 nm and compared with the profile observed when varying molar ratios of A : B and A : C. Particular attention was paid to shifts in the emission maxima of complexes B and C both to compare with the behavior reported by Wenger *et al.* and because of their higher emission intensity. Additionally, the excited state lifetimes of complex A and B were recorded at different molar ratios. This gave us an indication of whether energy transfer was occurring between the species.

Complex A, orange light emitter

Complex B, blue light emitter

Emission spectrum of blue emitter
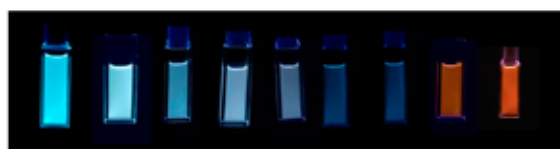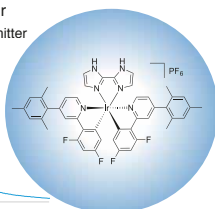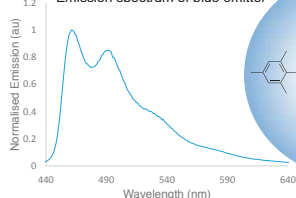
Complexes A and B at molar ratios B:A in degassed dichloromethane irradiated by UV light

Pure B   3.1:1   2:1   1.7:1   1.25:1   1:1   1:2   1:4   Pure A

Emission spectrum of orange emitter

Complex C, green light emitter

Emission Spectrum of green emitter
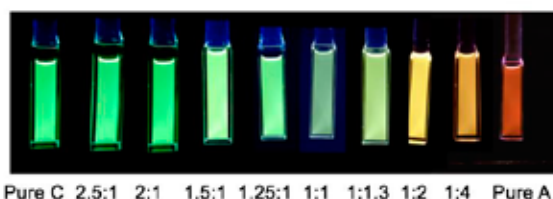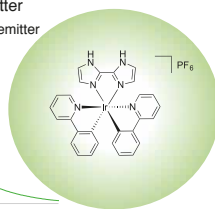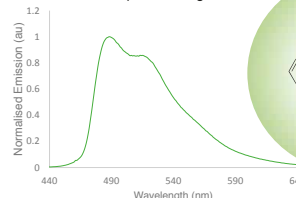
Complexes A and C at molar ratios C:A in degassed dichloromethane irradiated by UV light

Pure C   2.5:1   2:1   1.5:1   1.25:1   1:1   1:1.3   1:2   1:4   Pure A
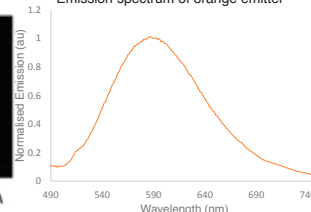
Emissive lifetimes, τ_e of complex A and B in degassed dichloromethane at different molar ratios

Complex A Moles : Complex B Moles	τ_e at 460 nm (ns)	τ_e at 590 nm (ns)	Relative contribution (%)
1 : 0 (pure A)	-	184	11
		751	89
1 : 1	1219	348	30
		842	70
1 : 1.25	1198	238	20
		875	80
1 : 1.5	1282	334	22
		1013	78
1 : 1.75	1295	367	31
		1089	69
1 : 2	742	157	10
		660	90
0 : 1 (pure B)	848	-	-

Variation in peak emission wavelength as a function of the molar ratio A/B and A/C

- Wavelength of maximum emission in Complex A : B titration (nm)
- Wavelength of maximum emission in Complex A : C titration (nm)
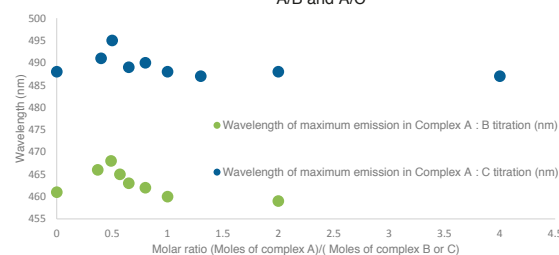
4. RESULTS AND DISCUSSION

A shift in the emission wavelength of complexes B and C was observed in the presence of an increasing concentration of complex A. Changes in the colour of the solutions were also observed under UV light. This variation suggested that there may be an interaction between these complexes in solution. Certainly both experiments mirror each other in the response the peak emission has to the molar ratio. Complexes B and C both contain the same biimidazole ligand and so would be expected to react in a similar way to the presence of A. However the results do not compliment those of Wegner *et al.*,[2] which is surprising as it was anticipated that the supramolecular system would follow a similar hydrogen bonding type mechanism to the one they observed. The τ_e data obtained in degassed dichloromethane showed that no substantial change in the τ_e of either complex occurred in the presence of the other. If an interaction or energy transfer were occurring between the complexes, a marked change in the τ_e of B would be observed as a function of the concentration of the complementary complex.

5. CONCLUSIONS

While the shifts in peak emissive wavelength of complex B and C did vary with the concentration of complex A, no clear trend linked the shift to the molar ratio. These results suggest that there could well be an interaction between these complexes. This most likely takes the form of a salt bridge between the diacid ligand and the biimidazole ligand, however further studies will be required to fully investigate the interaction.

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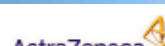
Computing translations and the translational hull of semigroups

Finlay Smith; supervised by Dr. James D. Mitchell, School of Mathematics and Statistics

Introduction

Semigroups are mathematical structures which abstract many naturally arising situations in mathematics, such as addition of whole numbers and composition of functions. *Computational semigroup theory* uses computers to investigate properties of semigroups.

My project in particular was to find ways of computing objects associated with semigroups, called *translations* and *translational hulls*. These objects relate to how the size of certain semigroups can be increased in a manner that preserves some of the original structure.

Many problems in computational semigroup theory are impossible to solve through brute-force techniques, hence the need for efficient algorithms. For many of these problems, efficient methods exist for special classes of semigroups. Brute-forcing the translational hull of a semigroup with a modest 100 elements would be impossible within the lifetime of our universe. My project aimed to find both efficient algorithms for calculating the translations and translational hulls of arbitrary semigroups, as well as improved methods for any special classes that might arise.

Digraphs

Associated with semigroups are objects called *directed graphs (digraphs)*, diagrams of nodes and connections between them, as seen in Fig. 1. By investigating these digraphs, properties of the semigroups can be deduced. By studying *endomorphisms* (structure-preserving maps from digraphs to themselves) we gain information about translations of semigroups. While investigating this link, I found an efficient method of turning *vertex-coloured digraphs* into *vertex-coloured graphs* that preserves some structure of the digraph, based on techniques in [1]. This resulted in a 400x faster calculation for certain large examples.

Fig 1.
Simplified digraph of a small semigroup

Fig 2.
Reduction of a vertex-coloured digraph to a vertex-coloured graph
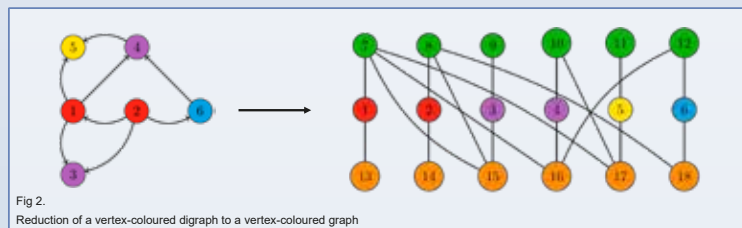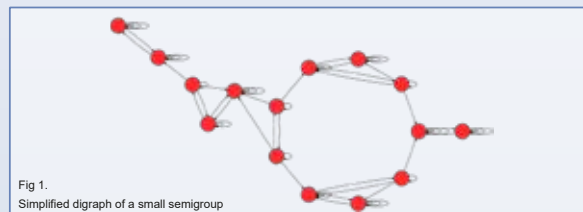
Translations and translational hulls

Generating sets are compact descriptions of potentially very large semigroups. Generating sets for the translations of *rectangular bands* and *completely 0-simple semigroups* were found, based on work of Howie [2] and Petrich [5] respectively. This is useful as there can quickly become far too many translations of a semigroup to work with as individual objects, but we can still investigate properties of the set of all translations.

For example, a 10x10 rectangular band (with 100 elements) has 2×10^{10} translations; we can explicitly describe all of them. Similarly, we can calculate how many translations there are of any completely 0-simple semigroup without having to enumerate them.

A new algorithm for finding the translational hull of an arbitrary semigroup was designed, proven correct, and implemented. This is based on a technique called *backtrack search*. This is a search through a "tree" of possible solutions to the problem, where whole "branches" are cut off as soon as they are discovered to not lead to solutions. Certain properties of the translational hull often allow very large branches to be cut off.

The translational hull of completely 0-simple semigroups can also be found through a backtrack search, with certain specialisations based on Petrich's description in [5]. This is often much more efficient than the algorithm for arbitrary semigroups.

Summary

New and efficient methods for calculating translational hulls and translations of semigroups were found, some of which are specific to certain classes of semigroup and are particularly fast. These algorithms are efficient enough to be practical for semigroups with up to 150 elements, where brute-force methods would be impossible to use. All useful results from the research have been implemented in GAP [6], a programming language developed at the University of St. Andrews in collaboration with an international group of researchers, and will be publicly released as part of the Digraphs [3] and Semigroups [4] packages for GAP.

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What is the relationship between institutions and entrepreneurship?

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2016 Laidlaw Internship in Research and Leadership Programme

A. Literature overview

This project aims to test whether more effective institutions increase entrepreneurship (Institutions Hypothesis).

What are institutions?
Institutions are constraints that structure economic activity (North, 1990).
They can be divided into a) constraints on the relationship between two private parties, i.e. contracting institutions and b) constraints on the relationship between private parties and the state, i.e. broad property rights institutions (Acemoglu and Johnson, 2005).

Why are effective institutions better for entrepreneurship?
When institutions are effective investors can engage in profitable transactions which are necessary to set up and grow a business, without fearing defection by other parties.

What are typical measures for effective institutions?
Contracting institutions are measured by legal formalism and private property rights' enforcement indices. Broad institutions are approximated by the Polity IV constraint on the executive and corruption indices (Woodruff, 2006).

Using Instrumental Variables, the literature finds a positive causal effect from institutions to economic outcomes, i.e. the institutions hypothesis is not rejected.

Empirical methodology
The institutions hypothesis is mostly supported by cross-country evidence using the Instrumental Variables methodology (IV).

What is the Instrumental Variables methodology?
It is difficult to establish a causal effect from institutional variables to entrepreneurship using simple Ordinary Least Squares (OLS) because institutional proxies are likely to suffer from endogeneity problems such as reverse causality. Reverse causality refers to the fact that better institutions can be a cause as well as a result of more entrepreneurship. To control for this endogeneity problems, researchers use instruments, i.e. variables that are correlated with institutional proxies but are exogenous to entrepreneurship (Acemoglu and Johnson, 2005).

Which instruments are used?
English common law is correlated with institutions that better enforce private contracts (contracting institutions).
Using former colonies as observations, lower settler mortality and lower population density in 1500 are correlated with better broad property rights institutions because these conditions were conducive to settlement rather than extraction of resources by colonists(Acemoglu et.al, 2001), (Acemoglu et. al, 2002).

C. Empirical investigation
✓ 2 datasets and 2 methodologies (Ordinary Least Squares & Instrumental Variables)
✓ Dependent variable: New Limited Liability Businesses per 1,000 working age people (World Bank, Doing Business Data)
✓ Proxies for institutions: Constraint on the executive index, corruption index, legal formalism index, private property rights' protection and enforcement index
✓ Controls: macroeconomic variables, ease of trading across borders, malaria cases/capita, education, financial development, aid dependency
✓ Instruments: log population density in 1500 , log settler mortality for broad institutions and legal origin for contracting institutions

Weakness Checks for IV (dataset 1)

Instrumented Variables	Test for Weakness of instruments (first-stage) Minimum eigenvalue statistic	The Null Hypothesis that the instruments are weak is rejected at the 10% level	Number of observations
polit, legform	.010	No	18
polit, proper	.017	No	20
corruption, proper	.256	No	21
corruption, legform	.081	No	19

Weakness Checks for IV (dataset 2)

Instrumented Variables	Test for Weakness of instruments (first-stage) Minimum eigenvalue statistic	The Null Hypothesis that the instruments are weak is rejected at the 10% level	Number of Observations
polit, legform	.013	No	29
polit, proper	.325	No	32
corruption, proper	.074	No	34
corruption, legform	2.027	No	30

Notes: tests for non-nested Iterations with controls when both types of institutions are instrumented; legal origin, log settler mortality, log population density in 1500 used as instruments; all values rounded up to 3 decimal places

Results with all the controls: effect of institutional variables on entrepreneurship (dataset 2)

Indep. Vars.	OLS (1)	IV (1)	OLS (2)	IV (2)	OLS (3)	IV (3)	OLS (4)	IV (4)
Corruption	---	---	---	---	1.317 (1.194)	-4.446 (13.463)	1.575 (1.381)	.612 (2.572)
Polity IV constraint	.081 (.113)	-3.741 (19.704)	.080 (.085)	-.119 (.637)	---	---	---	---
Legal formalism	1.149 (.803)	6.557 (33.758)	---	---	---	---	.722 (.940)	.066 (1.111)
Property Rights	---	---	.063 (.048)	.125 (.225)	.022 (.045)	.588 (1.441)	---	---
R^2	0.594	---	0.603	0.512	0.712	---	0.712	0.744
Obs.	34	29	40	32	43	34	36	30
F-test: p-value	0.003	0.995	0.000	0.011	0.000	0.114	0.000	0.000

Notes: ***significant at the 1% level, **significant at the 5% level, *significant at the 10% level; all values rounded up to 3 decimals places; data sources, full results, robustness checks and methodology details are available upon request

B. Assessing the existing evidence

Reverse causality is not controlled because of problems in the instruments
✗ There are measurements errors in the instrument for settler mortality (Albouy, 2012).
✗ Instruments for broad property rights are likely to fail the exclusion restriction because they are capturing effects of human capital and present disease environment (Glaeser et al., 2004)

The "independent observations" assumption is violated
✗ During the colonization period the wealth of some core countries depended on the extraction of resources by periphery ones. If dependencies have persisted between core and periphery countries, the assumption that entrepreneurial outcomes across countries are independent is violated. The violation of the independent observations assumption introduces bias in the estimated coefficients of institutional proxies. That dependencies have persisted is supported by the dependency theory according to which 'periphery' countries today are less rich and entrepreneurial largely because their resources are extracted by core countries, for example via high interest rates on loans.

Cross-sectional evidence is restrictive
✗ Cross-country studies estimate average effects but the effects of institutions are likely to vary across time and space (Chang, 2011). For example, while it was the patent system which enabled innovations during the first phase of industrialization in the UK, it was the absence of patents which helped Germany develop its chemical industry (Boldrin, Levine, & Modica).

D. Findings
I. A causal effect of institutions on entrepreneurship is not established robustly when controls are included because the instruments for institutional proxies are weak, i.e. the instruments are weakly correlated with the proxies they are supposed to approximate.
II. In both datasets, when both types of institutions are instrumented and all controls are included, no institutional variable is significant in any IV specification.
III. An association between institutions and entrepreneurial activity still emerges using Ordinary Least Squares. For example, after performing Iterations to reach a preferred specification using dataset 1; I find that 10 points increase in the Heritage Foundation Index for property rights (score ranges from 0 to 100), is associated on average with 830 new businesses per 1,000,000 people of the working age population.

E. Conclusions (Summary)
This project investigated the institutions hypothesis both empirically and analytically. The institutions hypothesis that more effective institutions have a positive causal effect on entrepreneurship is not established robustly. Because cross-country evidence is subject to limitations, one may need to look beyond cross-country studies.

Future Work
Despite the trade-off in terms of external validity, promising directions for research are comparative studies of similar countries after exogenous variations in institutions or studies at the sub-national level where exogenous instruments for institutions are available.

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Selected Data Sources
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Speaking Security Through Arabic:
The Role of the Media in Translation

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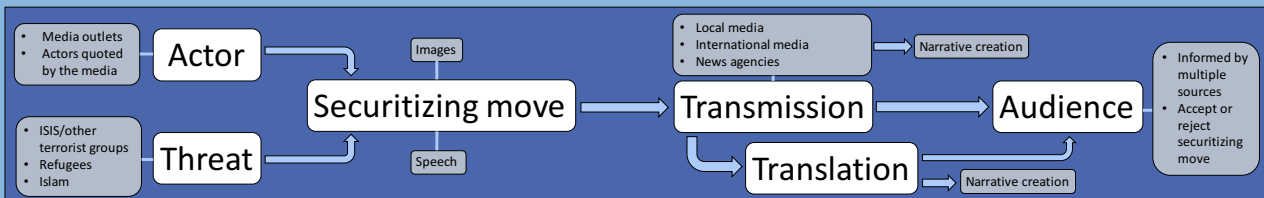
Introduction:

In *Security: A New Framework for Analysis,* the Copenhagen School posit that security is socially constructed through speaker-audience interactions–an **actor** designates something (be it the military capabilities of another state, a terrorist group, or a disease such as HIV, for example) as an **existential threat** to a certain **referent object** (the thing that is threatened) through a **speech act**. This **securitizing move** is then either accepted or rejected by the **audience**[1].

Securitization theory has traditionally neglected the role of the media. Yet the media, from *The Sun* to *The Economist* to social media, are the primary means through which audiences access securitizing moves by transmitting speech acts from actors to their audiences. This project argues that such transmission is not the only role of the media – they are actors in their own rights by covering certain stories in certain ways in certain locations within their publication. The media presents threats and referent objects as part of a larger narrative. Understanding the varied roles of the media in securitization allows for a more nuanced understanding of securitization as an interactive and continuous process.

Combining securitization theory, the media, and translation, this project examines how security threats are constructed and perceived when they are rooted in the Arabic-speaking world. In recent years, many of the threats that have been subject to securitization attempts have their origins in the Middle East, where Arabic is the primary language. Translation then plays a considerable role in shaping how the media reports on events that occur in the Middle East and how we perceive such events.

Proposed Model: Incorporating multi-lingual media into the securitization framework

- Media outlets
- Actors quoted by the media

Actor

- ISIS/other terrorist groups
- Refugees
- Islam

Threat

→ **Securitizing move** → Images / Speech →

- Local media
- International media
- News agencies

Transmission → Narrative creation

Translation → Narrative creation

Audience
- Informed by multiple sources
- Accept or reject securitizing move

Case Study: Coverage of the Islamic State and Ramadan by *The New York Times* and Al Jazeera during Ramadan 2016

Overview:

LexisNexis was used to identify articles that mentioned both the Islamic State (ISIS) and Ramadan in *The New York Times* and Al Jazeera during this year's Ramadan (6 June – 6 July). This search resulted in 21 hits from *The New York* Times and 17 from Al Jazeera, covering 18 and 12 unique events, respectively. Additionally, five events, including the 29 June Istanbul airport attack and the 3 July Baghdad bombings, were covered by both publications and mentioned both ISIS and Ramadan. Al Jazeera Network's online Arabic language coverage and *The New York Times* were selected for this case study due to the high degree of popularity within their respective language markets[2]. ISIS has been and continues to be framed as a threat to a wide range of referent objects in both the West and the Middle East. Ramadan was searched in tandem with ISIS because it provided a strict temporal boundary and, while it is generally interpreted by most Muslims as a time to focus on prayer, purification, and charitable works, it has been used by ISIS as a time to carry out attacks[3]. Articles from Al Jazeera were translated into English and all articles were analysed, paying particular attention to who was speaking, what (if anything) was being securitized, the use of specific securitizing language, and any specific securitizing moves undertaken by actors. These observations were collated into an Excel spreadsheet in order to draw out comparisons and broad themes within and across the two publications.

Multiple speakers, threats, and referent objects
- Actors:
  - *The New York Times* and Al Jazeera
  - Political leaders and analysts
  - Marginalised populations through human interest stories
- Threats:
  - ISIS
  - Refugees
  - Muslims
- Referent objects:
  - Western values
  - Refugees
  - Physical borders

Human security
- Most frequent referent object within both publications was humans
- Variety of focuses:
  - Insecurity of Westerners – surprise element of terrorist attacks
  - Daily struggle for survival for refugees and those under ISIS control
- Emphasis on insecurity occurring during Ramadan

Key findings

Effects of translation
- Invisibility – that statements and quotes were made in foreign languages was not acknowledged
- Loss of context – little explanation of why certain foreign actors or events are influential or newsworthy
- Localisation – changes in structure and word choice to better fit local cultural and linguistic patterns

Security paradox
- Definition – when objects are presented as both threatened and a threat
- Ramadan:
  - Threat – increased attacks due to ISIS doctrine
  - Threatened – traditional time of security for Muslims
- Muslims:
  - Threat – potential ISIS members
  - Threatened – face largest and most direct threats from ISIS, rising Islamophobia in the West
- Refugees:
  - Threat – potential ISIS members, drain on resources for citizens
  - Threatened – quality of life in camps, risks of leaving their homes

Example - same photo, different language:

Following the 29 June attack on Istanbul's Ataturk Airport, the first article by both publications to mention both ISIS and Ramadan used the same photo. However, the content and style of the two articles reveals differences in how such events are securitized. This demonstrates some of the key similarities and differences between the two publications regarding their roles in securitization.

The New York Times

The New York Times – 'Dozens Left Dead As Attackers Hit Istanbul Airport' (29 June 2016)
- 2 ISIS mentions and 1 Ramadan mention
- Length – 1587 words
- Language – vivid, described scenes of chaos around the airport in tandem with the use of this image and nine others
- Sources – Turkish and international leaders as well as political analysts
- Signposting – explained *why* commentators were quoted and their role
- Narrative – situated in growing number of attacks worldwide as well as Turkey's shift from securitizing actor to being threatened

Ilhas News Agency, via Agence France-Presse — Getty Images

AL JAZEERA MEDIA NETWORK

Al Jazeera – 'International Condemnation for the Attacks on Ataturk Airport' (29 June 2016)
- 1 ISIS mention and 1 Ramadan mention
- Length – 533 words
- Language – little original language, focused on official reactions rather than the attack itself, used two additional images
- Sources – Turkish and international leaders and official spokespersons
- Lack of signposting – officials deemed to be legitimate by virtue of the office they hold
- Narrative – more subtly demonstrated in quote choice through emphasis on solidarity and speaking 'terrorism'

Conclusions

- The media's roles in securitization include being a securitizing actor, a narrative creator, a translator, and a transmitter for other securitizing actors.

- Translation is embedded within the reporting process and often removes the context necessary for understanding and responding to securitizing moves.

- Speaking security in the media offers a way for Arabic and English-speaking audiences to hear from and respond to a wide range of actors, threats, and referent objects.

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Author: Mary Chan; Supervised by: Dr Kate Cross; School of Psychology; Funded by: Laidlaw Undergraduate Internship in Research and Leadership Programme 2016

Sex differences in workplace behaviour

The role of BIS/BAS scale sensitivity

Introduction

Many industries, particularly in STEM fields, see a gender imbalance in the workforce. This project aims to investigate the **psychological sex differences which may underpin workplace behaviour** and potentially help to explain these gender imbalances.

Our research focused specifically on the **motivations behind asking questions** during workplace meetings. A scale was developed to measure how participants evaluate the "**Pros**" and "**Cons**" of asking questions. Participants' scores on this scale were compared to their scores on the Behavioural Inhibition and Activation Systems (**BIS** and **BAS**) scales originally developed by Grey (1981)[1] to measure **sensitivity to punishment and reward.**

Existing research suggests that BIS/BAS would impact motivations on work behaviour[2] and that females have an increased sensitivity to punishment[3]. On this basis, we aimed to investigate:

- **differences** between men and women in BIS/BAS/Pros/Cons scores, as well as in their behaviour when asking questions;

- and whether or not participants scores on the aforementioned scales would significantly **affect their behaviour** when asking questions (whether or not they **hesitated** before asking questions).

Methods

An **online survey** was devised and administered via Qualtrics. This survey consisted of two main sections:
1) An adjusted version of RST-PQ (Personality Questionnaire)[4], to measure **BIS and BAS** scores; and

2) Our own questionnaire to examine perceived **pros and cons** to asking questions in meetings, focusing on the participants' own experience asking questions during meetings.

Participants were also asked about their most recent experience asking a question during a meeting, and whether or not they **considered the question** before asking it (indicating a measurable **hesitation**).

The survey was then distributed through channels such as university newsletters, research mailing lists, social media, workplace community groups, and a US-based Qualtrics survey panel. This returned a usable sample of **308 participants**, with 193 females, 107 males & 8 unknown sex.

Scales used

"How accurately does each statement describe you?"
BIS – sensitivity to punishment / negative situations
- Anxiety, risk assessment & passive avoidance
- E.g. *"The thought of mistakes in my work worries me"*

BAS – sensitivity to pleasure/ appetitive stimuli
- Four subscales: (1) Reward interest; (2) Reward reactivity; (3) Goal-drive persistence; and (4) Impulsivity e.g "*I'm always buying things on impulse".

"Please rate how likely you think each outcome (of asking the question) was."
Pros
- Based on positive attributes associated with the BAS
- 7 items / outcomes, e.g. *" I will feel like I am part of the team."*

Cons
- Based on negative attributes associated with BIS
- 8 items e.g. *"I will feel that I am wasting the group's time".*

An exploratory factor analysis indicated that both Pros items and Cons items loaded onto 2 separate factors, suggesting the scale we developed is relevant to use.

Results

Multivariate analyses of variance indicated a significant **sex difference** in **BIS** and **BAS (particularly reward reactivity** and **impulsivity**) scores (see graph below).

Mean scores by gender
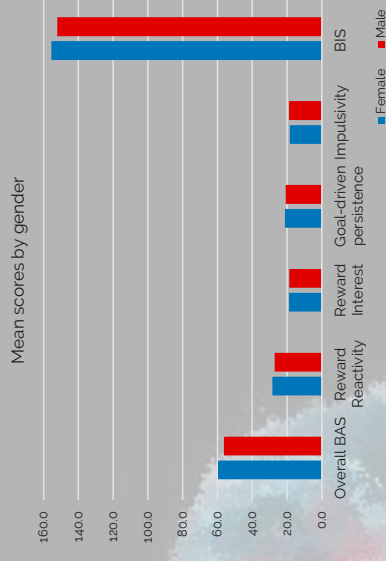
However, there was no significant difference between men and women in the Pros and Cons scores. A binomial logistic regression suggested that **males were less likely to consider asking a question** before asking it.

There were also links between the scores on BIS and Pros **scales** and the **consideration of questions**. A higher BIS score significantly increased likelihood of considering questions. A higher Pros score decreased the odds of question consideration.

Discussion

This data indicated that **question-asking behaviour may be linked** to participants' own **sensitivity to punishment and reward**. As would be expected, increased hesitation may have arisen from increased sensitivity to punishment.
Testing the links between gender, BIS/BAS, Pros/Cons, and question consideration gave mixed results. Future research could make use of a **more comprehensive sample** to determine the **interactions** between gender and scores on varying levels of question consideration, as well as other meeting behaviours.

Nonetheless, the conclusions drawn from this project have notable implications on how **measurable psychological processes** may result in tangible behavioural changes in the workplace. If we start to acknowledge sex differences such as the ones apparent in both BIS/BAS scores and question-asking during this project, we could begin to address **issues that may underlie gender problems** within current workplace dynamics.

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Background image: McCarthy, M. (2014). Retrieved August 30, 2016 from http://blogs.plos.org/neuro

Using Willingness-to-Pay Observations to Improve Climate Change Negotiations

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Introduction

There is a trade-off between reaching a climate change agreement all countries will participate in, and reaching an agreement that provides incentives for sufficient pollution reduction. Martimort and Sand-Zantman's 2016 paper "A Mechanism Design Approach to Climate-Change Agreements" highlights this trade-off and proposes a possible solution.

Their solution has countries with equal cost of abatement providing equal emissions reduction effort. However, using all available information about countries and their willingness to pay for emissions reductions should enable a more efficient agreement.

How valuable is this information? Why is it not being used? I use numerical simulations in a modification of Martimort and Sand-Zantman's model to find out.

Model

Countries differ in their marginal cost of exerting emissions reduction effort parameterised by θ. Higher θ means higher efficiency and thus lower costs. The benefit countries receive from a climate change agreement is described by the following utility function:

$$U(\theta) = t(\theta) + \alpha e(\theta) + (1-\alpha)\mathbb{E}[e(\bar{\theta})] - \frac{e^2(\theta)}{2\theta}$$

- Utility of country with efficiency parameter θ
- Transfer received from or played into agreement
- Utility from own effort
- Utility from other countries' effort
- Own emissions reduction effort provided
- Aggregate worldwide effort
- Cost of exerting effort e(θ)

Feasible agreements

Climate change negotiations are characterised by:
- Asymmetric information (about costs)
- Voluntary participation by sovereign countries
- Limited enforcement and commitment

→ This leads to inefficiencies and an under provision of emissions reductions, even in the optimal feasible agreement.

A feasible agreement must therefore take into account:
- *Participation Constraints:* Since benefits are global, what matters is how much each country stands to gain from an agreement compared to business as usual.
- *Incentive Compatibility:* Countries need to be compensated for not overstating their costs.
- *Budget Balance:* Funding has to come from somewhere, so subsidies to some countries have to be matched by contributions from others.

Experiment

To explore the value of using all available information, I compare optimal agreements when willingness-to-pay observations are available with those in a non-discriminating mechanism.
I introduce the parameter ρ, represented in Figure 1, to capture the amount of information available when designing an agreement.

Treatment

- We assume information about countries' willingness to pay is allowed to be used so that countries can be divided into two groups:
  1. Countries likely to have a high willingness to pay. Dashed blue in figures.
  2. Countries likely to have a low willingness to pay. Blue in figures.
- The assumed cost distributions of the groups are represented in Figure 1. Dashed and solid blue in Figure 1.
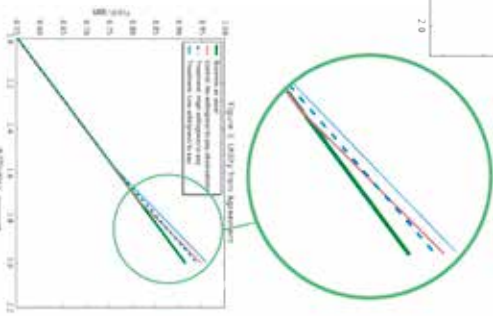
Control

- We find the optimal agreement taking constraints into consideration but without using additional observable information.
- This case corresponds to ρ = 0, and the cost distribution represented in red in Figure 1.
- Additional benchmarks are business as usual (green in figures) and the (unrealistic) case of perfect negotiations without constraints. Dashed green in figures.

Method

I run numerical simulations in a discretised version of the model under the following parameterisation:
α = 0.85, θ~Uniform (1,2), ρ = 2.5 for the treatment and ρ = 0 for the control. Optimal agreements are approximated by a two-item menu of linear tariffs. Countries self-select by choosing a tariff that determines their financial contribution and effort level.

Figure 1. Distribution of Costs

Results

Allowing willingness-to-pay observations to be used increases world welfare, defined as total utility from the agreement, by an amount equivalent to 14.8 % of the gap between welfare under business as usual and welfare with perfect negotiation.

The following graphs show the amount of emissions reduction effort exerted (Figure 2) and the utility each country gains (Figure 3) from the different agreements.

Figure 2. Emission Reduction Efforts

- The treatment increases world welfare by enabling agreements that mandate lower effort levels but have more countries exerting effort. This leads to higher aggregate emissions reductions.
- Countries with a high willingness to pay require less compensation for joining an agreement. By using this information, funds can be used to compensate higher effort levels by less efficient countries than in the no-information control case.

Figure 3. Utility Approach

- Even though aggregate utility is higher under the information treatment, there is a group of countries who experience significantly worse outcomes when willingness-to-pay observations are used.
- Efficient countries with a high willingness to pay for emissions reductions are strictly worse off in the treatment case. The additional information is used to elicit higher payments from them, since their participation is already easy to secure.

Conclusion

Overall world welfare would increase if information about countries' willingness to pay for greenhouse gas emissions reductions was allowed to be used when negotiating climate change agreements.

There is, however, a group of countries who benefit from the exclusion of this information, and this can help explain why willingness-to-pay observations are not currently being used.

Future research should focus on quantifying the potential welfare gains and characterising types of willingness-to-pay observations.

References and Acknowledgements:
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STATE-INDUCED FAMINE IN ZIMBABWE:
THE MATABELELAND SOUTH FOOD EMBARGO, 1984

Poster and research by Sarah Glass, supervised by Dr Hazel Cameron in the school of IR; thanks to the Laidlaw Undergraduate Internship in Research and Leadership, 2016

Research aims: the aim of this project was to analyse a newly disclosed US State Department archive related to the episode of state violence in Zimbabwe's Matabeleland provinces from 1983 to 1987. Ultimately I chose to focus on the use of hunger as a tool of repression in 1984, and undertook a broader literature review on famine to use as a frame of reference.

Research questions: the main topics addressed in the final project are 1) how events in Matabeleland relate to different models of famine and how this is reflected in media, government, and victim representations of events, and 2) how the events of 1984 can be explained not only as an aberration but in relation to structural historical, social, and political factors.

1. What is famine?

"We've learned to look only at the last stage of a long descent into horror" – Fintan O'Toole

Classical definitions of famine frame it as a natural disaster causing deadly food shortages which lead to mass mortality. This view remains highly influential, although Amartya Sen demonstrated in 1981 that famines are often produced by a crisis in food access, not food availability. Others argue that all modern famines are inherently political, and that it is misleading to define famines in terms of mortality: a more nuanced approach views famine as a process involving multiple socio-politico-economic factors, with death being one potential outcome. This better reflects the experiences of famine victims, and allows us to locate famines within a broader context.

In the 18th century Thomas Malthus first defined famine as a natural effect of population outgrowing food supply, and his ideas remain influential despite this hypothesis being discredited

2. What is a famine crime?

Definitions are political, and both shape and reflect prevailing norms. When famine was thought of as a "natural" population check, it allowed England to justify inaction when facing famines in colonies like Ireland and India. Today, when we view famine as a natural disaster and ignore its political dimensions, we again enable governments to deflect responsibility, as in Ethiopia or North Korea. Similarly, relying on mortality to identify famine may result in delayed intervention. Defining famine as a state crime challenges these narratives and emphasizes the responsible actors. David Marcus classifies famine crimes according to four degrees of severity, and argues that first and second degree crimes - ie, intentional or reckless creation of famine through state policy - should be prosecuted as crimes against humanity.

3. From independence to *Gukurahundi*: a timeline of events

1980

After independence in 1980, tensions remained between the two groups which had fought for independence: ZAPU and its armed wing ZIPRA, led by Joshua Nkomo, and ZANU and its armed wing ZANLA, led by Robert Mugabe. ZAPU's main support base was in the minority Matabeleland region, while ZANU enjoyed broad support in the rest of the country, sweeping Mugabe to power.

1982

Ex-guerrilla fighters from both armies continued to perpetuate violence, and those in Matabeleland became known as anti-government "dissidents". By 1982 there had been armed clashes between ex-guerrilla factions. Many ZANU members desired single-party rule, and the dissident presence, combined with fears of destabilizing South African influence via Matabeleland, led to the framing and arrest of many ZAPU members and the ousting of Nkomo from government, heightening existing tensions.

1983

In 1983 Mugabe came down hard on Matabeleland, deploying the elite North-Korean-trained Fifth Brigade of the national army, AKA Gukurahundi, to "crush" the dissidents. But it was ordinary civilians who paid the price, as the 5th Brigade inflicted extreme and indiscriminate violence justified by conflating dissidents, Ndebele people, and ZANU members. Although the number of dissidents in Zimbabwe likely never exceeded 400, the death toll between 1983 and 1987 is estimated to range from a minimum of 3,000 up to 20,000, with well over 90% of violence committed by state forces.

4. Weaponizing food

An integral part of the 5th brigade's strategy was withholding food to large regions of Matabeleland, particularly in Matabeleland South between February 3rd and April 10th 1984. This food embargo affected some 400,000 people, ostensibly so that they would not provide food to dissidents. Witness reports tell a different story, as in the case of a chilling quote from a 5th brigade soldier who told a crowd that they would be starved until they ate their own children. Reports from the time refer to widespread malnutrition, schoolchildren fainting from hunger, people eating grasses, goat skins and wild fruit, emaciation, and death. Even as more and more reports trickled out of the tightly-controlled area, Mugabe and his ministers adamantly denied any policy of starvation, sometimes claiming that there could be no starvation as no-one had died from hunger; this statement reflects the mortality-based definition of famine.

5. Fear, trauma, and the state

"What we call trauma takes place when the very powers that we are convinced will protect us and give us security become our tormentors" –Jenny Edkins

Many people viewed the violence in Matabeleland as a way for Mugabe to achieve his goal of a one-party state through intimidation of his political opponents. This might explain why the violence continued for so long despite its ineffectiveness in achieving its stated goal. Regardless, the intentional withholding of food and associated violence allowed the state to inflict psychological terror and ruthlessly demonstrate its power over citizens' lives. What stands out in interviews with survivors is that this horror was simply incomprehensible; they had suffered drought, war, and hardship before, but this was something else entirely. It was a betrayal by the very state they had fought to create. According to trauma theory, such a betrayal violates the core order through which we understand ourselves and the world, and as such shatters "any illusion of safety or security". State violence takes on new significance, reflected in cases when survivors reject the label "famine" in favour of "starvation" – a more active word - in order to emphasize state responsibility.

Gukurahundi: "the rain which washes away the chaff before the spring rains"

6. International Response

Damning reports filtering into the international press provided some incentive for Mugabe to halt operations for his own benefit. Media terminology also favoured "starvation" over "famine", likely due to the overt political nature of events. Declassified diplomatic correspondences show that the United States provided the strongest political pressure, making their provision of food aid dependent on its equitable distribution. Despite their concern, American documents reveal interpretations which again mirror classical definitions of famine, *eg* arguing that people were not truly starving because they were not yet dying and still had cattle to eat, ignoring the cultural significance of cattle and their role in Ndebele society. The US took pains to avoid confrontational or threatening measures, preferring to keep discussions informal and discreet out of concern that Zimbabwe would react poorly to overt threats. Meanwhile, British officials admitted to intentionally downplaying the severity of the situation, only stepping up pressure in response to press reports.

An image from a 2002 protest shows the ongoing threat of starvation and reckless faminogenic policy

7. Structural violence and patterns of abuse

These events are often portrayed as an aberration – a "moment of madness", in Mugabe's words - and while in many ways they were, context is also important. Zimbabwe's colonial history created deadly systemic inequalities and a dependency on the state and white commercial farmers for food, as the white minority dominated land and resources and displaced many people from their territory and livelihoods. This was already a cause of chronic food insecurity and malnutrition, especially in rural areas of drought-vulnerable Matabeleland, and this dependency in part enabled the systematic withholding of food. The tactic of collective punishment also mirrored strategies used by the Rhodesian army during the war for independence, and was enabled by invoking the emergency powers act of the same government. Finally, Robert Mugabe has continued to exploit dependency since 1984 by withholding food aid from supporters of his political rivals at election times, while starvation and food insecurity remain persistent dangers for many Zimbabweans.

Conclusions

Analysing the events in Matabeleland in relation to famine literature illuminates how the perceived natural vs political causes of famine shape both victims' experiences and outsiders' perceptions. Although the explicit withholding of food appears to be in contrast to naturally induced famines, famines cannot be clearly divided into "natural" or "unnatural", and this perception must be challenged to hold states accountable. Mortality continues to be used as a metric to define famine, sometimes to the detriment of its victims, as shown by both American and Zimbabwean comments. Despite this, according to critical theories of famine, the events in Matabeleland can be considered a famine regardless of mortality, based on what we know from eyewitnesses and survivors. Finally, placing events in historical and political context shows how despite their extreme nature, they are also part of a larger picture and tied to colonial power systems, Zimbabwe's experience with civil war, and a pattern of abuses by Robert Mugabe's government.

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Images from: theobserver.co.zq, Wikimedia commons, and www.zimbabwelatestnews.zw

Investigating the effects of physical exercise intensity on cognition throughout the day

Konstantinos Liverakos • Supervised by Akira O'Connor • School of Psychology
Funded by Laidlaw Undergraduate Internship in Research and Leadership Programme 2016

1. Introduction
Exercise impacts immediate cognition:
• Moderate levels lead to improvement (Chang et al., 2015).
• Exercise-induced exhaustion leads to decline (Tomporowski, 2003).
• No previous research on the longevity of the effect during the day.
• Important implications on everyday functioning.

2. Methods
• *Participants*: 19 St Andrews locals and students aged 18-35 years old; worked out at least twice a week.
• *Opportunity sampling* was used.

3 experimental conditions:
• High intensity group (Run to exhaustion; >90% of maximal heart rate) (Covassin et al., 2007).
• Moderate intensity group (Constant pace at 75% of maximal HR).
• Control group (Constant very slow pace).

3 cognitive tasks:
• Flanker task (Cognitive control)
• SART (Attention)
• A-OSPAN (Working memory)

Sequence of cognitive tasks: before, immediately, 4, and 8 hours after the exercise task.

3. Hypotheses
• The high intensity group will perform worse after the exercise task; the moderate will perform better.
• Different intensities will affect cognition throughout the day in alternate ways.

4. Results

a) Cognitive Control

Error differences for Flanker during the day
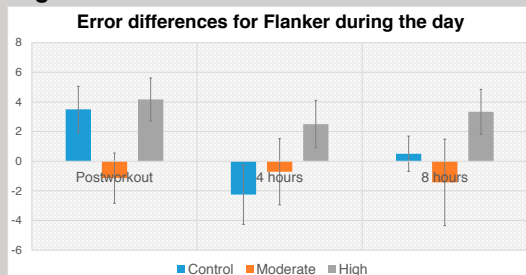
Figure 1: Error differences between Flanker tasks. during the day and baseline. Trend of more errors in the high intensity condition; trend of more errors right after the workout.

b) Attention

Error differences for SART during the day
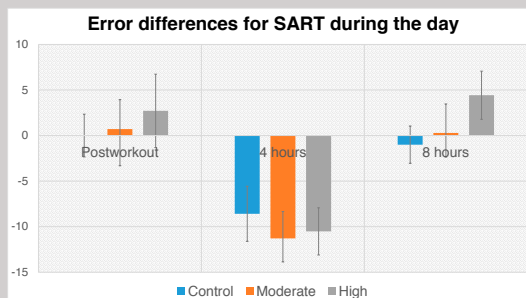
Figure 2: Error differences between SARTs during the day and baseline. Significantly more errors committed 4 hours after the exercise task.

c) Working Memory

OSPAN score differences during the day
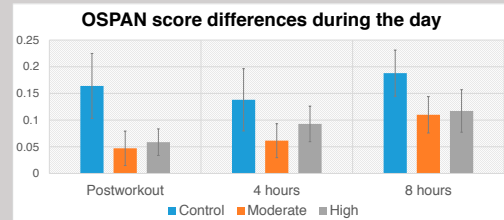
Figure 3: Differences in OSPAN scores between scores during the day and baseline. Scores 8 hours after the exercise task were significantly higher than immediately after it

5. Conclusion
Cognitive Control
• Non-significant trend of decreased accuracy in the high intensity condition throughout the day.
Attention
• Improvement in accuracy only present 4 hours after the task, regardless of condition.
Working Memory
• Improvement in performance was significantly higher 8 hours after the workout in all conditions.
• Evidence for practice effects.

Evaluation
• Long testing sessions led to a small sample size, and thus:
  • low power, i.e. high probability of a type 2 error (effect present but not observed).
  • potential type 1 errors (non-present effect found)
• Short exercise task for the moderate group could have lowered statistical power in its analysis.
• When practice effects were found, the analysis was focused on interactions.

6. Further Research
• Replication with larger sample size
• Investigate effect on P300 amplitudes (linked to attention)
• Investigate effect on different populations (e.g. healthy vs depressed participants)
• Implement other exercise modalities (e.g. cycling)
• Investigate potential effects of different hydration levels following exercise

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What *mbusa* can teach us about our own museum culture   *Rhys Madden*

Summary

Mbusa pottery emblems, traditionally used in female initiation rites by the *Bemba* in Zambia, have features which our museum presentation fail to account for. The aim of this poster is to highlight areas of conflict so that we can learn more about the assumptions and issues within our own museum culture. This is a necessary step if we are to improve on issues of representation and move towards meaningful collaboration in museums.

Museums select visually appealing objects.

In a hangover from the cabinet of curiosities, our presentation style is still concerned with visually grabbing the attention of visitors. We present things that are exciting in colour or form, such as the objects given below, while objects like *mbusa* are ignored. This over-representation of visually appealing objects does not reflect the reality of communities. It exaggerates the importance of professional craftsmen, while downplaying the role of everyday people who create simpler objects like the *mbusa* for community events, not for sale or aesthetic pleasure.

Museums reduce objects to being looked at.

Museum objects are often seen behind glass, out of touch. In contrast, *mbusa* are supposed to be used in a performative way. They are held, danced with, and sung about. *Bemba* women learn the meanings of the *mbusa* by engaging with them in practice, not by observation.
One such *mbusa* is called *mundu* (the lion), with two clay arms to blow into.

The initiate blows into one arm while another woman blows into the other. This creates an unpleasant and loud noise in the sound chamber. The two women then take turns blowing, and out of each other's hole comes a gentle whistle. One lesson taught by this is that a couple should stay calm and listen, rather than arguing and talking over each other.

Merely looking at *mundu*, as our museums do, does not allow for the same sort of embodied knowledge that actively engaging with it creates.

Museums artificially extend the lifespan of objects.

Putting objects in a visual case creates the illusion that they are unchanging and static. This may work for objects that are built to last, but it misrepresents those which are supposed to exist temporarily.

Many *mbusa* are built for a single ceremony, and destroyed immediately after use, the clay being piled up outside the initiation hut. Even the more long-lived *mbusa* are only seen during the ceremony, when they are brought out and redecorated, spending the rest of the time buried in secret places. A traditional museum display ignores creation and destruction, which is especially important because the act of creating the *mbusa* for each ceremony has great importance.

During the making process, part of which is pictured below, *nachimbusa* (the woman in charge of the ceremony), is inspired by ancestor spirits who tell her the secret designs. This inspired creation is integral to understanding the supernatural power of transformation that the *mbusa* are invested with, and how their use can change a girl into a woman during the ceremony.

Museums often rely on single explanations of objects, ignoring key variations:

1) The meanings of objects change with time and space. For instance, *mukowa* (the clan), represents family bonds, and is held in the hand while another *mbusa* representing the husband is balanced on the head. An accompanying song goes:

> *"Cupo asenda pa mutve; Uaseshya mukoa."*
> "She carries her marriage on her head; Her clan is dangling in her hand."

In the 1930's when mining was booming and men could start earning money wages, the explanations focused on marriage being more important than family, hence being held higher than it. However, in the 1990's, with mass male unemployment, the teachings stressed that you should not forsake your family during marriage.

2) Museums also hide differences between individuals within a community. Each *mbusa* can hold multiple meanings. For instance, the *kabende* (mortar and pestle) *mbusa*, on the right of the group below, can teach the practical movements involved in grinding millet grain, or the social responsibilities of an adult to work productively, or represent male and female and how the two are productive and reproductive when working as one.

Different meanings suit different individuals, and so even collaborative museums which reach out to source communities may end up following the interpretations of some members of the community and not others, recreating power structures within that community by listening to experts and community leaders over laypeople.

Museums isolate objects from their contexts.

Mbusa as a category does not just include the small pots that are easy to display in museums. It also includes large floor models and wall paintings, both made on-site. The pottery *mbusa* only gain power when combined with these other forms of *mbusa* within the particular ceremony. Some *Mbusa* may be spoken about outside of the ceremony, and their patterns used in other forms of decoration, as in the outer wall decoration pictured below, but they lose their supernatural potency. Similarly, our museum style presents them outside of the initiation ceremony, and therefore reduces them from being *mbusa* to simply being pots: the act of presentation changes the object.

Our museums also invest too much meaning into the objects themselves. For the *Bemba*, *mbusa* as objects are secondary to the teachings associated with them. These teachings thread their way through everyday life in Zambia, with the songs connected to the pots becoming proverbs that can be quoted to encourage correct behaviour. By removing *mbusa* from their context in life-long teaching our museums overstate the importance of the objects themselves.

Museums and *mbusa* are both going through a crisis of relevance.

Many museums are worried about how to keep object-based education relevant in a time when so much information is accessible online. *Mbusa* are also going through a crisis of relevance, but their strategies for reinvention may be valuable for our museums to learn from.

To counteract the lack of interest appearing in *mbusa*, artists like Agness Yombwe have reacted by breaking down the exclusivity of the message. The meanings are being recreated through popular artworks, and basic meanings such as multi-coloured dots symbolising seeds, and therefore the importance of planned, hard work, are being taught to children in art workshops.

Likewise, the government has supported the production of a booklet that uses traditional *mbusa* to help educate people about newer concerns, such as HIV/AIDS prevention. Museums could learn a lot about creating relevance from *mbusa* in Zambia, especially on widening audiences and relating objects to contemporary and public issues.

Are we all heading down the same path? The developing world's approach to an environmentally secure future: An evaluation of India's climate change policies

Produced by: Shashank Manjunath   Supervised by: Dr. Eoin McLaughlin   Department of Geography and Geosciences

Introduction

Climate change is a global crisis that is affecting societies around the world and will worsen over the coming years. Despite climate change becoming increasingly familiar in the public domain, solutions to tackle it are diverse and complex. This project focuses on India's efforts to tackle climate change from a national policy perspective and its implementation.

FreeImages.com/ Arno Nym

Aims

1) To obtain a thorough understanding of India's national climate change policies and their implementation status
2) Use interviews with key stakeholders to get an on-ground perspective on the implementation of the policies and how they affect the private sector
3) Use interviews with key stakeholders to validate secondary research
4) Recommend suggestions and improvements for the national level climate change policy for India

Research process

1) Original project revolved around exploring the climate change policies of India, China and Indonesia. In-depth secondary research helped in realizing the vast and complex nature of India's national, state and local level policies.
2) Shift in focus to India enabling an in-depth study rather than a broad-stroke analysis
3) Opportunity to inject significant primary research (three detailed semi-structured interviews) – Diverse sectors targeted. GenFlux Engineering, Gram Oorja and IFMR-LEAD. Validation of secondary research
4) Scalar flexibility (policy implementation at the national and regional levels)
5) Secondary research focusing on academic papers and organizational reports (example: IFMR LEAD, CSE)
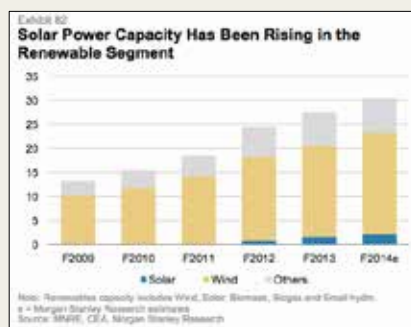6) Evolution from focusing on secondary research to a mixed methods approach

FreeImages.com/Caffe

With special thanks to Mr. Sameer Nair, Mr. Vivek Venkataramani and Mr. Ganesh Shankar for the insightful interviews

Research and analysis

1) NAPCC is spearheading the climate change initiatives and programmes in India, composed of regulatory frameworks, subsidies, taxes and other incentive programs.
2) Split into 8 national missions: Agriculture, Energy Efficiency, Green India, Sustainable Habitat, Himalayan Ecosystem, Strategic Knowledge for Climate Change, Solar and Water
3) Descriptive with greater focus on target setting and goals, top-down mode of design
4) Still early stages to effectively judge India's progress in implementing the policies as some of them are still in their design stage and most have been implemented for only five to six years. But as of yet, the national police is and some state policies are comprehensive but implementation is not at the highest level with considerable lags (Venkataramani, 2016).
5) Historical responsibility and CBDR are common themes within international climate policy discourse within India (Atteridge et. al, 2012) Mix of political, financial, technical factors that have influenced India's position.
6) Increasing international pressure and growing economy (2000's) have influenced India's political interests (foreign relations). Additionally their traditional positions has decreased in popularity and with possible isolation in environmental negotiations their stance on climate change to some extent has evolved (Betz, 2012)

Exhibit 82
Solar Power Capacity Has Been Rising in the Renewable Segment
Note: Renewables capacity includes Wind, Solar, Biomass, Bogas and Small hydro.
e = Morgan Stanley Research estimates
Source: MNRE, CEA, Morgan Stanley Research

1) Balance between economic growth and environmental sustainability reflected in NAPCC but remains to be seen if its effective
2) Policies influenced by EU and USA policies and international conferences (Environment protection Act 1986, Energy Efficiency mission (NMEEE) similar to US Star program and Japan's Top Runner initiative) (Atteridge et. al, 2012). Renewable energy programs similar to feed-in tariff and renewable purchase obligations policies in UK and Germany.
3) NAPCC guides decentralization of national mission into sub-national and regional context on paper but this national-state level coordination is complex and is yet to be effectively achieved.
4) High levels of socio-economic, environmental and political diversity within India make local-regional-national policy coordination and implementation challenging.
5) Some states have focused on mitigation strategies (Gujarat and Karnataka) whereas some have focused on adaptation (Manipur). Some SAPCC's have been designed keeping development concerns as a priority, thus state climate change plans differ significantly (Atteridge et. al, 2012)
6) One of the positive points highlighted in an interview and secondary research conducted is that energy efficiency policy instruments such as PAT (Perform, Achieve and Trade), Market Transformation for Energy Efficiency and RPO (Renewables Purchase Obligation) are examples of good policies which have been successful in some states (Nair, 2016)

Recommendations

1) All the policies require greater clarity regarding finance (state vs. central funding) (Venkataramani, 2016)
2) A bottom-up approach is required for effective policy implementation. An example of this is greater government and public support for off-grid renewable energy projects as they will reach out to rural areas where grid penetration and connectivity is poor (Nair, 2016) and (Venkataramani and Shivaranjani, 2015)
3) Grid connectivity needs to improve significantly around the country to ensure distributive renewable energy is successful and penetrates rural and low income communities as well.
4) Urgent attention and efforts are required in linking the three elements of India's climate policy landscape: international, national and regional.
5) Injecting climate change programmes and initiatives into existing departments (mainstreaming) rather than create a new line of government agencies. This will aid in tying environmental and climate change policies into development objectives. This is explored in the NAPCC but requires more action (Venkataramani and Shivaranjani, 2015)

1) A specific government department should be created which will be tasked with mapping overlapping areas between current government department schemes and the national and state climate change missions, bringing greater clarity for financing, ease administrative and technical concerns and aid in effective distribution of resources (Venkataramani and Shivaranjani, 2015)
2) Improving M&E frameworks is urgent as currently lack of M&E programmes lead to ineffective review of policies (Venkataramani, 2016)
3) Mission specific regulations mandates and regulations are required to ensure compliance to the goals set. The energy efficiency mission is an exception as the BEE (Bureau of Energy Efficiency) enforces regulations and penalties (Venkataramani and Shivaranjani, 2015). The regulatory environment is weak in its design and enforcement and the other national missions have been created with multiple guidelines rather than laws/acts (Venkataramani, 2016).

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Summary

1) Simplify bureaucracy and red tape surrounding new businesses. Complicated bureaucracy has also hampered communication and inter-departmental coordination. Many agencies are operating in silos presently (Venkataramani, 2016).
2) Policy coordination and consistency is one of the most fundamental changes required (Nair, 2016) and is consistent with the primary and secondary research conducted.
3) Fundamental changes are required to the education sector as well. Social sciences and humanities need to be encouraged and restructured at the school and university levels to ensure policy making and implementation is at a high level. Socio-cultural changes are required to improve public perception of social sciences and create future career pathways in the private and public job sectors.
4) Additionally, information asymmetry is a significant problem and data collection , collation and reporting need to improve at the village and local level and at the state level (Venkataramani, 2016)
5) Thus multiple changes are required for climate change policies to reduce implementation deficit (gaps between policy and implementation and on-ground impact) (Makinde, 2005) and create an effective operational environment. Some problems are specific to the environmental and climate change policies whereas some are long-standing general development, political and socio-economic problems.

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Participation of children in the Vietnam War

Maya Nguyen ◘ Supervisor: Ali Watson ◘ School of International Relations

Introduction

In the academic discourse of international relations, children are rarely seen as powerful actors independent from adults. As a result, their role in the global arena is often undermined, which in turn contributes to an incomplete understanding of global conflicts and issues. The aim of this research was to fill the gap in the literature. Focusing specifically on the participation of children in the Vietnam war, this research investigated two sources: archives and interviews. For this research, I visited 2 National Archival Centres in Hanoi and Saigon. I also interviewed 11 participants, who participated in the war when they were under 18, about their war experience.

Children in the battlefields

Reasons for joining

Revolutionary family: many children grew up in families that aided Vietnamese military. Children grew up seeing their parents participating in the revolution, which later affected their own decision to join the army

> *"I was a child of a family like that, with parents like that - how should I behave?"*

> *"Everyone was excited, the battlefield was something honourable and glorious. Going to the battlefield was like a longing among youth back then"*

Volunteering: some children joined the military without realising the significance of the war. Rather, they followed the spirit of festivity and excitement that was associated with the battlefields.

Jobs and tasks

Participants performed a wide range of jobs: fighting on the frontlines, defusing mines, paving roads, nursing, aiding in communications, providing bombs, etc. Children still did a lot of adults' jobs, despite some difficulties due to lighter weight or younger age. However, the participants were proud of what they did, claiming that they sometimes were better than the adults.

> *"I was so small back then, I don't understand how was I so good. I was smart, and I was so good at my job - no one could criticise me"*

Coping mechanisms

The war was very hard for children; however, they developed strong support networks and coping mechanisms. The support came from comrades, who became the second family. Another way of coping was to keep in touch with their identity as students: reading books and studying. Cultural events, singing, dancing, games, laughing and joking were part of daily life.

> *"But if it wasn't for the optimism and excitement, there would be no way to tolerate it"*

To my mother

"...You've sacrificed so much, gone through so many hardships waiting,
You've waited long days, long months, for me to come back
But, mother, I can't come back to you
I wander from one place to another, trying to take care of what they call life
And my life isn't fulfilled
[...]
I hope I will live meaningfully, true to what it means to be human
So my heart is peaceful for thousand times
I will endure suffering for the rest of my life
For comrades, for comrade's spirit
Who sacrificed and sealed their life with hardships
Then, God on the other side, will see
And there will be a day when mercy will be given to me.

And then I will come back to you..."

(Poem written by one of the participants to her mother while she was in the army. Translated and published with the participant's permission)

Children in the cities

Reasons for joining

Recruited by Viet Cong: Children, especially students, were targeted by the Viet Cong to spread communist propaganda and encourage them to participate in social movements. VC had undercover staff that trained children and educated them about communism beginning in school grade 7.

> *"Students have the cultural knowledge to be able to absorb the political effect [...] they have enough intellectual levels to be able to comment political changes, government policies"*

Inability to sit and watch while soldiers are sacrificing their lives in the army

> *"We are just weak students, but [...] please rest assured that we will always be with you in the battle for saving the country [...] so that your labour and sacrifice is not in vain"*

Family attachment: some children had families associated with VC. Most recruitment happened via family

Demands

The most common demands were changing the government regime, stopping US stops involvement in Vietnam, releasing political prisoners.

Methods

Hunger strikes, burning US cars and vehicles, mass truancy from school, attacking the US government staff, demonstrating, hanging up posters, cultural evenings and sports events, organising conferences

Impact

> *"This is the first country I have seen where they let the 11 grade out and the president has to resign"*

No immediate impact. However, student protests attracted a lot of attention, then eventually spread out to the rest of the nation. Students are described as the main liberation force.

Conclusion

Both outside and in the battlefields, children contributed to the war eagerly. Listening to their point of view also deepens our understanding of unquantifiable factors that have contributed to the success of the war: the importance of comrade relationships; how family dynamic affects the decision to join the military service; and how students were essential to the spread of communist propaganda. Further research into the role of children in international relations, then, would be beneficial to gain further insight into inner dynamics of military conflicts.

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The influence of facial health cues of a defendant on decisions about the severity of punishment

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Introduction

This project investigated whether there is a bias in our judgements towards healthy-looking people.

High body mass index (BMI) and low fruit and vegetable intake have a negative effect on our health, increasing the risk of disease[1-2]. Diet affects facial skin colour and BMI has impacts on face shape[3] (Figure 1), changing attractiveness and perceived health[4-5]. A defendant's attractiveness influences their punishment, depending on the type of crime they committed[6]. People with low socioeconomic status have a poorer diet[7], and may appear less healthy, which could bias judgments towards them.

Aims

- To examine the influence of perceived health of defendant's face on the severity of punishment for different types of crime
- To investigate if people's own health and the type of crime committed affects their judgements

Methods

53 adults filled in a demography and health questionnaire. They were presented with 12 crime descriptions with images of defendants' faces, and asked about the severity of punishment that should be given. Images differed in perceived health (Fig. 1).

unhealthy transform   healthy transform

Figure 1. Pictures of defendant's face used as stimuli in the study. Left – unhealthy looking face, right – healthy looking face

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Results

There was a significant influence of **crime type** on the punishment. **Theft** was punished more severely than **speeding** or **vandalism** (Figure 2).
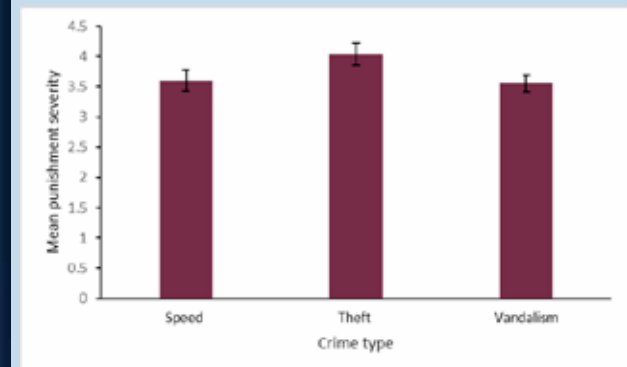
Figure 2. Mean punishment severity (scale 0-7) given to defendants committing three crime types: speed, theft, vandalism

There was a significant **interaction** between **defendant's perceived health** and **participant's BMI**. Participants with unhealthy BMI gave more severe punishment to healthy-looking defendants, whereas participants with healthy BMI punished unhealthy-looking defendants more (Figure 3).
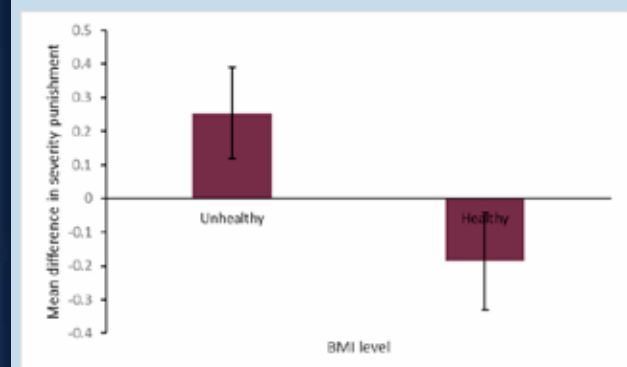
Figure 3. Mean difference in severity punishment (scale 0-7) given to healthy and unhealthy looking defendants (healthy – unhealthy) by participants with healthy and unhealthy BMI level

There were no other significant effects or interactions.

Conclusions

Defendant's perceived health has no influence on the severity of punishment for the crime. There is a bias towards defendants who have similar level of perceived health compared to our actual level of health.

Theft was given the highest punishment, while speeding and vandalism were punished less severely. Theft is thus considered a more serious crime than the other two.

Striking at their Core: De-funding the Islamic State of Iraq and Syria

Laidlaw Undergraduate Internship in Research and Leadership 2016
By Alessio Shostak; Supervised by William Vlcek; School of International Relations

Recent terrorist attacks in the Western world – in Paris and Brussels to name but a few – have enhanced the spotlight on the threat of terrorism as a whole, and the Islamic State of Iraq and Syria (ISIS) in particular. As of now there has been relatively scant coverage of an important facet of ISIS operations – their ability to raise and move funds in order to finance both their terrorist activities and maintain an infrastructure necessary to sustain their caliphate. ISIS has been described by David Cohen (2014), a leading official in the US Department of the Treasury, as **"the best funded terrorist organisation we have come across"**. Indeed, in 2015 their estimated asset pool was valued at $2 billion; greater than the GDP of many small nations. This poster will illustrate (a) ISIS's sources of funding (b) the Islamic State's most common methods of fund transferral , and (c) the measures the international community – particularly the EU and the United States – has taken to counter the financing of terrorism (CFT) since the 9/11 terrorist attacks.

ISIS Fundraising Sources
(a) Sale of petroleum + 'refined' petroleum both domestically + abroad
(b) Involuntary taxation within territory: 5-10% cash on all cash withdrawals, jizya tax on religious minorities, customs taxes
(c) Sales from cultural artefacts from over 4,500 archaeological sites across territory
(d) Revenues from ransom payments
(e) External donations from wealthy patrons in Gulf.

Traditional Transfer Methods:
(a) Formal bank transfers
(b) Informal transfers
Problems -> lack of transparent audit trail + balancing positives/negatives of transfer system

Emerging Transfer Methods:
(a) Cryptocurrencies (Bitcoin), Risks -> anonymity + decentralized nature
(b) Prepaid Cards, Risks -> differences in legislation across jurisdictions + lack of reporting requirements on international transfers
Used by perpetrators in Charlie Hebdo attack!
Overall, little/no legislation regulating emerging methods

EU Policy Responses
(1) Implementation of UNSCRs 1267 + 1373 to freeze assets of designated terrorist actors
(2) Adaptation of EU legislation (directives) to match FATF AML/CFT Recommendations
Third Directive (2005) -> First to prohibit financing of terrorist organisations

Failure: Ratification of these provisions by member states + subsequent implementation of these laws has occurred **slowly** and is as of yet **incomplete**
Key reason -> Differences in perceived threat of terrorist attack among member states -> lack of implementation in **'free-rider' nations**

United States
CFT Strategy
(1) Sanctions Regime : Executive Order 13224 expanded the US Treasury's ability to strategically freeze assets whilst prohibiting US individuals from transacting with designated parties
(2) AML building block legislation - CFT efforts "intrinsically related to its AML strategies" (Ryder 2015)

2001 PATRIOT ACT
(a) Mandatory know your customer mechanisms on Fis
(b) Facilitated increased sharing of financial intelligence between the public and private sectors regarding suspicious individuals

ISIS Strategy
(a) Restricting ISIS access to international financial system by banning wire transfers to and from ISIS-held Iraqi bank branches
(b) Disrupt ISIS revenue from funding sources through coalition airstrikes against mobile oil refineries
(c) Targeted sanctions against ISIS operators + financiers

U.S. ISIS Strategy - Limitations + Successes
a. Weakness of Iraqi government makes enforcement difficult
Policy does not take into account use of cryptocurrencies/informal networks
b. The need to retain oil infrastructure in region to secure long-lasting stability has dented airstrike capability, BUT airstrikes have so far done considerable damage
c. Foreign donations currently negligible percentage of total fundraising haul BUT will rise in importance due to diminishing revenue from oil

Importance of Military Action
a. Long-run **oil revenues + extraction productivity** expected to be low due to declining oil prices and coalition airstrikes
b. Long-run **economic prospects** expected to be low due to;
Decreasing oil revenues, excessive taxes (on cash withdrawals, agricultural equipment, school fees) + lack of human capital & healthcare investment
c. Bleak long-run **military prospects** relative to rivals (Iraq + Saudi Arabia)
ISIS will be unable to territorially expand due to weak economic + military outlook (partially caused by airstrikes) and will be trapped in area with diminishing returns
Will be forced to revert to fundraising from foreign donors
International community can therefore use sanctions on financiers to starve ISIS out

Conclusions and The Way Forward

Several factors have limited international efforts to combat terrorist financing; firstly, the lack of communication between the private and public sectors with regards to compliance requirements has inhibited the effectiveness of increased financial sector regulations in halting the transfer of terrorist funds. Moreover, CFT legislation has thus far not been able to adapt to technological improvements such as cryptocurrencies, which modern terrorist organisations such as ISIS are more likely than ever to resort to. Nations must (a) enact legislative measures to ensure that novel technologies are not exploited for nefarious purposes by terrorist organisations, (b) continue to share financial and military intelligence with local forces on the ground in order to continue choking off the Islamic State's fundraising potential, and (c) prioritize coordinated military action to shift ISIS fundraising towards traditional - and thus more easily targetable – sources.

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US Flag Backlit - https://upload.wikimedia.org/wikipedia/commons/9/9b/US_Flag_Backlit.jpg - By Jnn13 (Own work) [CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0) or GFDL (http://www.gnu.org/copyleft/fdl.html)], via Wikimedia Commons
EU Flagga - Uploaded by MPD01605 - https://www.flickr.com/photos/mpd01605/6755068753 - Creative Commons License 2.0 (https://creativecommons.org/licenses/by-sa/2.0/), resized
September 11th WTC View From Jersey City 9-2001 - https://upload.wikimedia.org/wikipedia/commons/5/55/September_11th_WTC_View_From_Jersey_City_9-2001.jpg - By Aspersions (Own work) [Public domain], via Wikimedia Commons

What contributions does the Copenhagen School make in capturing and explaining

The General Security Service's use of torture, cruel and inhuman treatment during interrogations of Palestinians
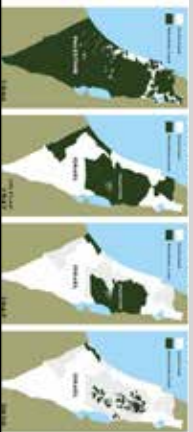
Between 1981 and 1991?

Aims:
(1) To use the Copenhagen School as an analytical lens to examine the practice of torture in this context;

(2) To assess its overall utility as a theoretical framework for doing so.

Securitisation Theory

The Copenhagen School posits that securitisation processes involve a *securitising agent* who produces *speech acts* in response to what they regard as an *existential threat* (to, for instance, national security). Speech acts are linguistic utterances capable of transforming the nature of an issue, rendering it a *security issue*. However, securitisation only happens when speech acts are *accepted* by an *audience*. With this, the issue moves from the domain of the *ordinary*, to the domain of the *extraordinary*, thus warranting *emergency measures* to be taken to address it.

Findings and Analysis

The use of torture, cruel and inhuman treatment is categorically prohibited under the United Nations Convention Against Torture (1984). In the given timeframe I examined how this practice was:

1 **Authorised by Israel under the term "physical and psychological pressure" in a report published by the Landau Commission.** The Report noted that "physical and psychological pressure" would be used when interrogating Palestinians involved in Hostile Terroristic Activity (HTA) against Israel. HTA was regarded as an existential threat to the State of Israel, warranting the extraordinary and exceptional measure of "physical and psychological pressure." The Report had two parts; one for public access, which garnered audience acceptance of the Israeli citizenry, and one that was classified. Only the classified part of the Report detailed what "physical and psychological pressure" involved. The Report's recommendations were then endorsed in full by the Israeli Knesset (Parliament) who acted as another audience.

2 **Used on Palestinians during the First Intifada by members of the GSS.** The First Intifada was a primarily non-violent resistance movement against Israeli occupation. Nonetheless, the Government of Israel believed it involved HTA. Thus, it regarded it as an existential threat neccessitating the extraordinary and exceptional measures authorised by the Report. Consequently, Palestinians involved in alleged incidents of HTA were detained, interrogated and subject to "physical and psychological pressure."

3 **Contested by the United Nations Convention Against Torture (UNCAT), as well as human rights organisations such as the Human Rights Watch (HRW), B'Tselem and Al Haq.**

From transcripts of testimonies and interviews with Palestinian detainees, I found that "physical and psychological pressure" effectively amounted to torture, cruel and inhuman treatment. The HRW estimates that 4,000 to 6,000 Palestinians have been subject to this practice per year since the Report was published (Human Rights Watch 1994, xiii).

> *A number of the interrogators participated simultaneously in the beating, which included strangulation by an interrogator sitting on the interviewee's chest and stopping his nostrils and mouth with a damp sack. At the same time, another interrogator would squash or hit the interviewee's testicles. Another interrogator would hit other parts of the body (B'Tselem 1997, Appendix IV, 114-115).*

4 **Reviewed by the Israeli Higher Court of Justice after thirteen applications were presented to it by human rights organisations.** The applicants were subject to "physical and psychological pressure" by the GSS, but accused personnel of the use of torture, cruel and inhuman treatment. On review, the Court declared certain interrogation techniques as contravening Israeli Law, while nonetheless not examining whether "physical and psychological pressure" amounted to "torture, cruel and inhuman treatment" under International Human Rights Law. The Court did not have access to the classified part of the Report which detailed what "physical and psychological pressure" was in the first instance.

Beyond Securitisation: Questions for Research

· **Can speech acts be silent in that they are unheard, but still powerful and effective?** Although part of the Report detailing what "physical and psychological pressure" was remained classified, this practice still took effect and was used by the GSS on Palestinians during interrogation. Could the speech acts authorising its use be conceived of as silent?

· **Can there be more than one audience?** The classified part of the Landau Commission Report was made available to the Israeli Knesset, who endorsed it as one audience. However, the Israeli citizenry were another audience, since they had access to public part of the Report. Only with audience acceptance – in this instance of both audiences – can securitisation take place.

· **(How) do securitisation processes interact with international law?** Extraordinary and exceptional measures are so-called specifically because they entail the breaking of rules that would otherwise hold – oftentimes these are human rights. This in turn calls into question the status and perceived sanctity of human rights, weighing them against the need for security and calling for a choice to be made by securitising agents and indeed their audiences.

Alanood Sinjab
With the kind supervision of Dr Faye Donnelly

Laidlaw Undergraduate Internship in Leadership and Research

School of International Relations
The University of St Andrews

The Paper Dragon: Do we overrate China's strength as a global superpower? The domestic factor."

Justyna Slowik, supervised by Professor Ian Taylor
School of International Relations
Funded by The Laidlaw Undergraduate Internship Programme

University of St Andrews

Introduction

In 1946 Mao Zedong used the phrase "paper tiger" to describe American imperialism that seemed threatening but in reality according to the Chinese leader was largely ineffectual.[1]

Living and studying in China has allowed me to observe China from the inside from which I have realized that the state in recent years has been and continues to face numerous internal challenges that often result from China's enormous economic success. This, in turn, poses a huge threat to China's domestic stability.

Internal fragility emphasized by and worrying my numerous interviewers made me start thinking whether China really is a rising superpower or just a "paper dragon".

China's economic success

China has achieved an enormous economic success and in less than 30 years has lifted more than 600 million people from the extreme poverty.[2]

In 2014 China overtook the US as the world's largest economy on the basis of GDP in Purchasing Power Parity.[3]

Since 2009 China has been the biggest exporter of goods and number one producer of electronics. As the owner of the largest foreign reserves in the world China is able to manipulate global markets.[4]

20,853   **18,558**
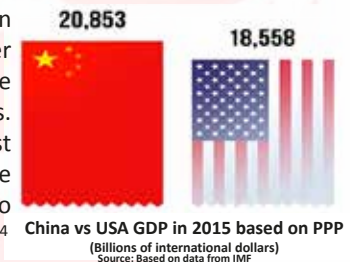
China vs USA GDP in 2015 based on PPP
(Billions of international dollars)
Source: Based on data from IMF

Internal Fragility

Reports and data presented by various institutions call the attention to the growing number of social protests in China soaring to record heights in 2015. During my internship I revealed that rising economic inequality , environmental degradation and unstable banking system have been the main causes of social protests in China between 2011 and 2015. In depth analysis protests' origins allowed me to recognize enormous economic success as a backbone of China's domestic rising insecurity.

Source: Based on data from China Labour Bulletin
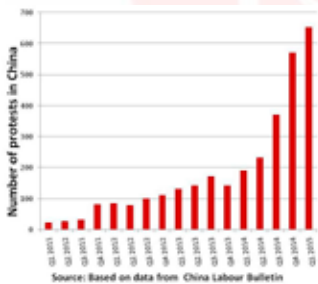
Domestic Problems-"Choking on success"

China has achieved a colossal economic development that brought not only benefits but also numerous negative results affecting China domestically. According to multiple researchers and survey that I conducted on 487 Chinese citizens three main issues concerning China are:

Economic Inequality   **Environmental Degradation**   **Bank Insolvency**

In depth analysis of the above revealed that China's economic success has been the main driving force behind all of them.

Impact on China's global position

Chinese leaders has been overtaken by the fixation on the rising internal insecurity fearing of mass protests that may overthrow the government. As growing number of riots spreads across the country, international considerations have been pushed away from the top agenda as the number one priority will always be sustaining the Communist Party of China in power. In a light of China's domestic fragility some key initiatives shaping the nation's rising position on the global stage became adjusted such as China's space program and "One Belt One Road Initiative".

Banks   Environment   Economic gap

Modified by: Justyna Slowik
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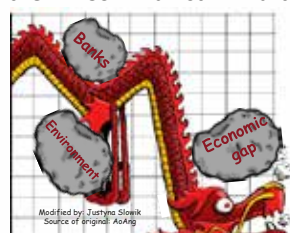
Conclusion

During my research I collected evidence of China's internal concerns taking precedence over external plans and challenges. As China's foreign policy is often described as a "byproduct of domestic situation" I extended my research and successfully connected the dots between economic successes causing domestic problems that in turn negatively affect China's position as a global player.

I finished my nine weeks research internship with a conclusion that growing China is not such danger as Western media often suggest but internal insecurity of China,- country we are highly dependent on can be a real threat.

FRAGILE HANDLE WITH CARE

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St Andrews, September 2016

Barriers to Participation in Higher Education

A Full-Time Undergraduate Student Parent's Perspective

by Melissa Turner

Aim

To provide a better understanding of the barriers to participation to the complete student experience from the perspective of full-time undergraduate (FTU) student parents at the University of St Andrews

Objectives

1. To explain whether there are barriers to participation in the complete student experience from the perspective of these student parents
2. To ponder if these barriers matter for them
3. To make recommendations to overcome these barriers

Background and Motivation

- "The student experience encompasses all aspects of student life (i.e. academic, social, welfare, support) with the academic imperative at the heart of it" (Morgan, 2011, p 1).
- Previous research on student experience mainly focuses on the first-year undergraduate experience of young full-time entrants to higher education.
- ⇨ Excellent student experience could increase the retention of students and aid progression (Thomas, 2012).
- Research on student parents is wide, but mainly considers part-time students or students at American Higher Education institutions.
- ⇨ FTU student parents do not engage in learning and extra-curricular activities as much as their peers (Brooks, 2014).
- Alternative access to full-time undergraduate studies at the University of St Andrews was created in 2013 thanks to additional funding from the Scottish Government and the Scottish Funding Council. Students from Further Education colleges are encouraged to apply for the full-time General Degree programme with the understanding that they can move onto an Honours Degree programme at the end of the second year if desired and academically possible.
- ⇨ There have been more FTU student parents at the University of St Andrews.

Methodology

- I adapted the methodology of Lasselle (2016). I consider that the perception of the height of the barrier is closely related to the perception of ease of participation in the complete student experience.
- I designed a questionnaire using Qualtrics. It was advertised to students on the alternative access pathway described above.
- I interviewed 8 FTU student parents and 5 members of staff of the University of St Andrews in June 2016. The interviews were no longer than 30 minutes. The list of possible questions was given to the interviewees prior to their meeting with me.
- Information given to each participant highlighted that I was interested in the barriers to the complete student experience from the perspective of FTU student parents at the University of St Andrews.
- UTREC approval: MN 12038

Findings: Barriers exist and matter

1. Four barriers to the participation in the complete student experience were identified: time constraints, cultural, financial and geographical barriers (see the gate diagram opposite, on the right-hand side).
2. Some participants stressed that it did not matter whether the barriers were real or perceived barriers their effect was the same.
3. Some interviewees indicated that participation in the complete student experience was important for a sense of inclusion to help with commitment to the course and therefore important for retention of students. However, the student parent interviewees usually stressed that they did not feel part of the university and felt "almost sitting on the outside looking in".
4. For many student parent participants, there was no desire to participate in the student activities or take advantage of the complete student experience.
5. Some interviewees indicated that participation might play an important role in positive destinations for the student parents after graduation.
6. If for some interviewees, sheer determination and desire were key to being able to attend events, many regretted that there was a lack of interesting events available for them and/or they could not attend events because of their timings or location.

Recommendations to encourage engagement and reduce the feelings of isolation

1. From Findings 1, 2, 3, 5, and 6: The creation of events for student parents arranged by a Student Parent's society or a Mature Student group. When these events are specific to employment opportunities after graduation, academic support or upcoming changes in welfare support, they could be made compulsory.
2. From Findings 1, 2, 3 and 6: Creche facilities for early evening events or Wednesday afternoon events to facilitate participation in the complete student experience such as sporting events and society events.
3. From Findings 1, 2, 3, 4 and 5: Developing further research into the impact of lack of participation in the student experience from student parents on graduate employment opportunities.
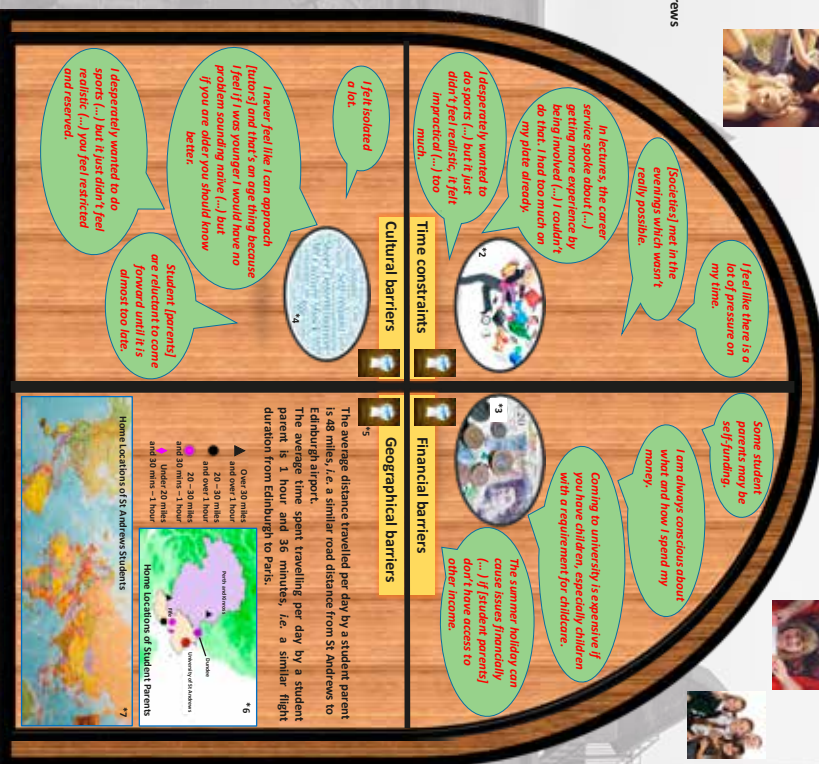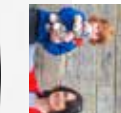
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*1 Image taken from www.google.co.uk/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwix-Duo_JOAhVPxQKHQVEBEQAQjhwIBw&url=https%3A%2F%2Fwwww.st-andrews.ac.uk%2Fabout%2Fhistory%2Fcoat-of-arms%2F&psig=AFQjCNHm42zQA3hOvR3Opqfrt8CjAIZzw&ust=1473167230048702
*2 Image taken from www.rollercoaster.ie/Article/Preschoolers-and-Older/Hungry-Turns-and-Stressed-out-Mums
*3 Image taken from www.markpack.org.uk/files/2014/09/British-money.jpg
*4 Turner, M., 2016. Cultural Barriers. s.l.:s.n.
*5 Image taken from cdn.wall-pix.net/albums/general-wallpaper/00030022.jpg
*6 Turner, M., 2016. GIS Map of Student Parents Home Locations. [Art] (University of St Andrews)
*7 Turner, M., 2016. World Map of St Andrews Students. [Art] (University of St Andrews)

Time constraints

> I feel like there is a lot of pressure on my time.

> In lectures, the career service spoke about (...) getting more experience by being involved (...) I couldn't do that. I had too much on my plate already.

Cultural barriers

> I felt isolated a lot.

> I never feel like I can approach [tutors] and that's an age thing because I feel if I was younger I would have no problem sounding naïve (...) but if you are older you should know better.

> I desperately wanted to do sports (...) but I just didn't feel realistic (...) you feel restricted and reserved.

> Student [parents] are reluctant to come forward until it is almost too late.

Financial barriers

> Some student parents may be self-funding.

> I am always conscious about what and how I spend my money.

> Coming to university is expensive if you have children, especially childcare (...) I [student parents] don't have access to other income.

> The summer holiday can cause issues financially (...) if [student parents] don't have access to other income.

> I desperately wanted to do sports (...) but I just didn't feel realistic (...) you feel restricted and reserved.

Geographical barriers

The average distance travelled per day by a student parent is 48 miles, i.e. a similar road distance from St Andrews to Edinburgh airport.

The average time spent travelling per day by a student parent is 1 hour and 36 minutes, i.e. a similar flight duration from Edinburgh to Paris.

Home Locations of St Andrews Students

Home Locations of Student Parents

Over 30 miles and over 1 hour
20–30 miles and under 1 hour
20–30 miles and 30 mins – 1 hour
Under 20 miles and 30 mins – 1 hour

Leptin and the Mitochondrion: New pathways to protect against dementia

Author: Karina Vitanova Supervisor: Gayle Doherty

School of Psychology & Neuroscience, University of St Andrews.

Introduction

Alzheimer's disease (AD) and other dementias are progressive, neurodegenerative disorders characterized by decline of memory and other cognitive functions, change in personality, loss of motor control, and seizures. The number of people affected by dementia is increasing every year with a projected 115.4 million dementia patients worldwide by 2050.

The anti-obesity hormone leptin, whose administration is mainly used for hypothalamic control of food intake (Elmquist *et al*, 1999), has recently been linked to AD. Doherty *et al.* (2013) have demonstrated that leptin increases the survival rate of neurons subjected to $A\beta_{1-42}$ and preliminary data from the same group has also suggested that leptin accomplishes this through its interaction with the mitochondria.

Because of its neuroprotective function, leptin has been positioned as a potential anti-dementia therapeutic. Therefore, the aim of the current project is to examine the precise effects of leptin on mitochondria and determine whether this is the key cellular mechanism underpinning leptin's known beneficial effects on neuronal survival and function.

Methods

SH-SY5Y neuroblastoma cells were subjected to cell death via serum withdrawal for undifferentiated cells or through $A\beta_{1-42}$ administration for differentiated cells in order to mimic conditions during neurodegeneration.

Fluorescence cell labelling techniques, protein extraction and analysis, as well as immunocytochemistry were performed in order to determine mitochondrial morphology and dynamics and observe changes in mitochondrial potential and protein expression.

Acknowledgements

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Dr. Gayle Doherty and Lisa Strother for their continuous help and guidance

Mitochondrial Morphology
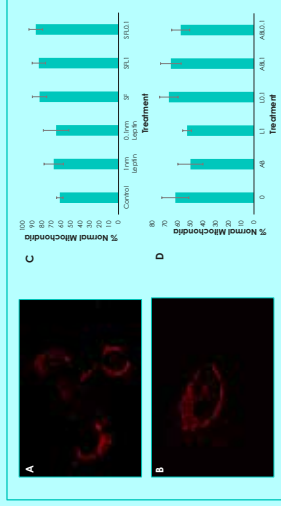
Figure 2. Mitochondrial morphology differences, measured using JC-1 fluorescence staining, between stress-induced and cells treated with 1nm leptin for 24 hours. (A) Serum deprived undifferentiated cells showed predominantly rounded and poorly labelled mitochondria, whereas those treated with leptin (B) displayed mostly normal mitochondria. Leptin administration demonstrated a trend for increasing percentage of normal mitochondria compared to the control and death-inducing condition in both undifferentiated (C) and differentiated cells (D).

Mitochondrial Protein Expression

Figure 1. ELISA analyses of (A) VDAC and (B) Fis-1 expression in undifferentiated cells after 1, 24, and 72 hours of treatment. (A) Higher VDAC expression was observed for serum-deprived cells treated with 1nm leptin in comparison to the control condition, demonstrating the beneficial effects of leptin on mitochondrial number. (B) Leptin treatment in serum-deprived cells appeared to significantly reduce Fis-1 expression in comparison to the control condition, exhibiting leptin's role in the regulation of mitochondrial dynamics.

Mitochondrial Potential

Figure 3. Mitochondrial membrane potential differences between stress-induced and leptin-treated cells as measured using JC-1 fluorescent imaging. (A) $A\beta_{1-42}$-treated differentiated cells exhibited impaired mitochondrial function due to reduced mitochondrial potential induced by the AD-associated protein. (B) Leptin-treated cells showed an increasing depolarization of the mitochondrial membrane, as indicated by the increased percentage of red colouration after leptin administration (C).

Conclusion

The study at hand aimed to examine the biomolecular mechanisms underpinning leptin's beneficial effects on neuronal survival and function.

It has been demonstrated that leptin has more than one subcellular target and through its interaction with mitochondrial proteins the anti-obesity hormone protects the mitochondria, and thereby the cell, against cell death, positioning leptin as a potential anti-dementia therapeutic.

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Double Discrimination: LGBT Asylum Seekers in the UK System

Researcher: Chris Walker; **Supervisor:** Dr. Gurcharllan Sanghera (School of International Relations)

Summary

The UK has come under sustained pressure in recent years to dramatically improve its methods of dealing with LGBT peoples who arrive at its borders seeking asylum, with successive governments having been slow to recognise the unique issues faced by them. From 2004, for example, over 98% of LGB asylum seekers "were returned to their countries of origin and told 'you will be discreet, and that will be reasonably tolerable [emphasis original]'" - a policy overturned by the Supreme Court in 2010 (Chelvan, 2012). Since then, there have been some improvements – however, LGBT asylum seekers are now faced with the near-impossible task of 'proving' their sexuality in order to make a 'credible' claim. My research focuses on the discrimination faced by LGBT asylum seekers within the UK system – from interviews, to the appeals process, to detention centres – and argues that such experiences merely replicate the homophobic discrimination from which such people fled in their home country. The UK recreates colonial ideas of 'savage' (underdeveloped) cultures which, by ignoring international human rights laws, create "human being[s] whose 'dignity and worth' have been violated" (Victims). The UK thus positions itself as an enlightened 'Saviour' nation which can provide humanitarian relief to those abandoned by their country of origin. In reality, however, the UK asylum system merely replicates some of the homophobia from which such people are fleeing, thus internalising the 'savage' culture which it claims to oppose.

Postcolonial Human Rights: Savages, Victims, and Saviours

The Savage Culture
A typical depiction of the 'savage other' in colonial painting. Such history informs the 'savage culture' idea of today.

The Victim
A scene recognisable to Western audiences of asylum seekers, portrayed as victims of their savage culture.

The Saviour State
In contrast, the UK is positioned as a progressive, liberal haven, which respects human rights for all citizens.

The Asylum Process

1

Screening Interview

- Supposed to be purely administrative – no questions to be made about the claim;
- However, **58%** contained additional questions about the nature of the claim.

2

Detention

- LGBT claimants are often placed in detention centres;
- Housed with people from their country of origin – thus forced to conceal their sexuality for their own safety;
- Suffer homophobic abuse from inmates *and* staff, reluctant to report it, however, for fear "such complaints will negatively impact on their asylum claim";
- Claimants can be detained indefinitely, and transgender inmates are often housed in unsuitable centres with limited medical care.

3

Substantive Interview

- Claimants must put forward a 'credible' claim – basically prove their sexuality;
- Caseworkers often base questions on Western notions of LGBT identity, rather than the culture of the claimant (see Fig. 1);
- Caseworkers are supposed to refer to Country of Origin Information Reports – however, only 24/37 reports give information on LGBT issues, and the information itself is often out-of-date or based on poor evidence (see Fig. 2).

4

First Tier Tribunal Appeal

- Judges often lack appropriate training in regard to sexual activity;
- In 2005, for example, a Senior Immigration Judge referred to homosexuality as "buggery" and "unseemly activity";
- Again, many Judges rely on their own beliefs about sexuality as they have no reference points.

DECISION

Inappropriate Questions: The Substantive Interview (Fig. 1)

"You have never had a relationship with a man. How do you know you are a lesbian?" (2013)

"Can I ask you why you did not have penetrative sex at any time in Nigeria 2009?" (2012)

"How many sexual encounters have you had with your partner?" (2013)

"Was it loving sex or rough?" (2013)

"So you had intercourse with him and not just [oral sex]?" (2013)

"What have you found is the most successful way of pulling men?" (2013)

Questionable Evidence: The Country of Origin Information Reports (Fig. 2)

- All reports make clear that they rely on "external information sources (usually) published in English". In reality, this means that the vast majority of these reports only quote *Western* governments, lawyers, INGOs, and newspapers, and rarely - if ever - sources published in the country of origin, or any cultural information (books, films, etc.);
- Again, many reports confused interpretation of country's legal systems. The report on Ghana, for example, notes the country criminalises 'unnatural carnal acts', but in the next sentence says "... the law does not explicitly refer to same-sex activity... [therefore] it is unclear whether the existing laws can be used to prosecute LGBT people".

Conclusion and Thanks

The UK government is aware of the issues covered in this poster, and yet has pushed back against attempts to force change. It is vital that the problems highlighted above are rectified as quickly as possible, so as to ensure the safety of those who come to our borders seeking sanctuary. The UK cannot continue to preach about human rights to so-called 'savage' cultures, whilst simultaneously replicating the very same issues in its own asylum system. I would like to thank Paul Dillane of UKLGIG for agreeing to be interviewed for my research; Chika Buchanan of Stonewall UK for talking me through their upcoming research on LGBT asylum seekers in detention; the Laidlaw Undergraduate Internship in Research and Leadership Programme 2016 for generously agreeing to fund and support this project; and to my supervisor, Dr. Sanghera, of the School of International Relations, whose invaluable advice and good humour kept me on track throughout the course of my research.

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Key Facts

PROPORTION OF LGBT ASYLUM SEEKERS GRANTED ASYLUM IN THE UK PRE-2010 (AVERAGE)

98%

- Rejected
- Granted Asylum

1951
Year the 'Convention Relating to the Status of Refugees' was developed, creating the modern idea of refugeehood

1999
First year gay (not-LGBT) people were able to claim asylum in the UK on the basis of their sexuality

86%
Proportion of applicants rejected because they were not believed to be LGBT (2011-13)

1,200 – 1,800
Number of LGBT people UKLGIG believe seek asylum in the UK each year

20%
Proportion of interviews deemed to contain stereotyping of LGBT people by Home Office caseworkers (2014)

76
Number of countries which criminalise consensual same-sex relations between adults

Tropicality in Cultural Media post-1970

INTRODUCTION:

Tropicality is a discourse, or suite of ideas and representations, that constructs the tropical world as the West's environmental Other (Arnold, 2000; Driver and Martins, 2005). Tropicality describes the experience of Europeans moving into, documenting, and colonising environments that were radically different from their own, and refers to a "prevalent and potent form of othering" that distinguishes a 'normal' temperate world from an 'exotic' tropical other (Arnold, 1998, p.2). Tropicality might therefore be considered an environmental counterpart to Orientalism which constructs the Orient, the East, as the West's cultural Other (Said, 1978). The tropics are an imaginative geography in that the region is both a *conceptual* as well as a *physical* space (Arnold, 1998), and recent critical engagements with tropicality examine how the tropics have been historically represented in binary terms, as a luxuriant and paradisiacal Eden, or as a degenerate and pestilential space.

AIMS:

• To identify and critically evaluate selected Western representations of the tropics in a range of cultural media post-1970 (literature, film, tourism, journalism, development discourse).
• To contextualise academic work on tropicality and explore imaginative geographies of environmental and cultural difference associated with contemporary forms of tropicality.
• To investigate how contemporary tropicality inspires and is shaped by these media of representation.

METHODOLOGY:

Imaginative geographies are concerned with the social construction of cultural difference. Central to understanding contemporary tropicality is the citationary nature of imaginative geographies, articulated and reiterated over time in a range of media (Gregory, 2009). A literature review enabled me to identify and evaluate contemporary engagements with tropicality in six distinct, interconnected areas. A post-colonial epistemology underpinned the research and informed my choice of methods, ranging from the interpretation of visual media to critical discourse analyses.

IN THE NEWS:

The epithet 'tropical' has been attached to a range of stories in the news from diseases and plants to tourist destinations and urban spaces. The Calais refugee camp has been denigrated as "the Jungle". "Jungle" conjures images in the popular imagination that dehumanise the camp's inhabitants, evoking ideas of savagery, barbarism, primitivism, and a lack of civilisation. "The Jungle" as a particular imaginative geography guides understanding of, and reaction to, those living in the camp and mobilises mistrust and fear of the Other.

Reports on the Zika and Ebola viruses conflate tropicality with disease and issues of security. Fear of contracting Zika at the Olympics in Brazil positioned the tropics as threatening and pestilential in the Western media. Visual maps that paint the tropical belt as a zone of risk obscure regional variations and contribute to the stigmatisation of affected countries.

DEVELOPMENT AND CLIMATE CHANGE:

In development and climate change discourse, two dominant representations of the tropics emerge:

Environmental Determinism and Tropical Underdevelopment	Conservation of Fragile Ecosystems and Habitats
Geographic Location in The Tropics	Climate Change and Exploitation of Environment
Conflict, Civil War, Poverty, Extreme Weather, Disease Burden	Degradation of Habitats, Endangered Species, Threatened Indigenous Communities, Climate Refugees, Global Inequality
(Jeffrey Sachs in *The Age of Sustainable Development*, 2015)	(Naomi Klein in *This Changes Everything: Capitalism versus The Climate*, 2014)

• Pan-tropical narrative of vulnerability, risk, and threat
• A discourse in which tropicality is assumed
• Contributes to ideas of Western superiority by fostering notions of dependence
• Implies civilisation only achievable through outside intervention
• Stimulates fear of an Other
• Draws on colonial ideas of primitiveness and racial superiority (Arnold, 2000)
• Ignores legacy of empire and capitalist development: contemporary maps of risk and violence "just the old map – the geography of empire" (Parenti, 2011, p.19)

• Tropics represented as a fragile, degraded region in need of preservation
• Recalls a history of political ecology
• Reimaging of the jungle as the rainforest and the "entire world's lungs" (Stepan, 2001, p.241).
• Need for conservation framed in terms of offsetting global North's consumption patterns
• Sparks calls for Western intervention in the form of monetary funding and scientific technologies
• Suggests neoliberal capitalism and environmental conservation are incompatible

LITERATURE:

Literary engagements with tropicality have a long history and expose a number of potent themes, including race, savagery, disorientation, isolation, discovery, exoticism, and enchantment. Garland's *The Beach* (2011) draws on Conrad's *Heart of Darkness* (1899), depicting an exploratory journey into the tropics that is both paradisiacal and hellish. Echoing Golding's *Lord of the Flies* (1954), human civilisation collapses when exposed to, and confronted by, the tropics. The community descends into a tableau of horror, transforming Eden to Hell "in the space of a few seconds" (p.354) and positioning the tropics as "the menace that lurks in the human condition" (Clayton, 2012). Kehlmann's *Measuring the World* (2007), also based on a journey of discovery in the German Enlightenment, satirically explores the life of naturalist and explorer Alexander von Humboldt. Humboldt guides the reader into the tropics to collect plants and animals and to document the region's physical geography in a thinly veiled attempt to bring 'order' to an 'unruly' tropical nature. However, whilst *The Beach* is premised on a touristic adventure, *Measuring the World* is a journey of scientific discovery, with the tropics not so much an idyllic holiday destination, as a source of exotic species, medicinal cures, and primitive peoples.

FILM:

The cinematic gaze is attracted to the tropics as sites of dreams and nightmares. Whilst Disney commonly presents the tropics to children as an alluring dreamscape (Whitley, 2008), critical filmmakers present the tropics both as paradise and a site of danger and threat. Spanish explorers come under attack from natives on the riverbank in Herzog's *Aguirre, The Wrath of God* (1972) just as American soldiers are attacked by the Vietnamese in Coppola's *Apocalypse Now* (1979). The Amazon remains central in Guerra's *Embrace of the Serpent* (2015) as a route to riches and a site threatened by Western exploitation. Filmmakers from the 1970s to the present depict the journeys of explorers and tourists into the tropics from the 16th through to the 20th Century and engage with history from colonialism to the post-colonial present. Whilst tropical natives are depicted traditionally as a threat to Westerners, the Colombian film *Embrace of the Serpent* reverses the cinematic gaze by presenting Western explorers as the Other through the eyes of the indigenous shaman Karamakate. Karamakate, the lithe, muscular native stands in stark contrast to the obese Polynesian god, Maui, in Disney's recent film *Moana (2016)*.

TOURISM:

Tourism advertisements typically represent the tropics as an exotic, paradisiacal Eden. This framing appeals to a belief in the purity of nature; an idea that has gained traction in the context of global environmental degradation. The beach, the ocean, tropical fruit, and the palm tree act as guiding motifs of tropicality today. This visual vocabulary imbues the tropics with a 'magical' exoticism that promises to "transform", "restore", and "reconnect" visitors. However, 'magic' is commonly "attributed to a social other" raising questions about how difference and distance is socially constructed (Picard, 2011, p. 6). Thompson (2006) draws attention to a history of manufacturing the physical environment of Caribbean islands to 'fit' Western ideals of a tropical island. Similarly, Picard (2011) uses 'the garden' as a metaphor to describe how the tropics continue to be cultivated for a global tourist elite.

Tourism reveals tropicality to be experiential and it is therefore unsurprising that the trope of discovery is a recurring feature of touristic representations of the tropics. By suggesting that visitors can "discover" a lost land, travel companies mobilise imaginative geographies of the Humboldtian explorer and conform to classical ideas of the tropics as "windows onto an ancient world" (Arnold, 2000, p.11).

THE VIEW 'FROM' THE TROPICS:

Accessing voices 'from' the tropics has proved challenging, but two entry points are poetry and tropical architecture. The emergence of a "Caribbean aesthetic" in 20th Century literature reflects a recognition of Caribbean writers reclaiming a voice and cultural tradition that had historically been suppressed and ignored (Donnell and Welsh, 1996, p.4). Olivia Senior's anthology *Gardening in the Tropics* (2005) engages with race, tropical nature, and colonial history. Her poems resist binary representations of the tropics and satirically address Western audiences, stating "I was amazed to discover, colonist,/it was *you* who feared *me*" (p.107). Recently, however, questions have been raised over the appropriation of Caribbean literature in a Western canon (Donnell and Welsh, 1996). Tropical Architecture is considered an indigenous form of expression in the Americas, but less so in British West Africa where it was predominantly a colonial enterprise (Le Roux, 2003). The work of Brazilian landscape architect Burle Marx in the 20th Century challenges conventional understandings of tropical nature by bringing together plants not usually found together and broadening the "visual vocabulary" of the tropics (Stepan, 2011, p.232).

CONCLUSIONS:

• An analysis of cultural media post-1970 reveals a continuing trend towards representing the tropics in binary terms, as exotic and luxuriant, or as threatening and disease-ridden.
• Classical tropes of tropicality such as discovery and exploration, savagery and barbarism, are recycled in contemporary media, mobilising imaginative geographies that position the tropics as the temperate West's environmental Other.
• Guiding motifs of tropicality that emerged in the mid 20th Century, such as the beach and exotic fruit, remain popular in touristic, literary, and cinematic representations of the tropics today.
• The allure of an exotic tropical nature is a powerful marketing tool with beauty, fashion, and tourist industries drawing on vibrant visual vocabularies of the tropics to sell their products.
• Western representations commonly homogenise the region, obscure the histories and geographies of the people and places they seek to represent, and deflect attention away from legacies of colonialism and exploitation.

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The Evolution and Impact of Identity in US-China Relations

Jessica Yin: School of International Relations: Supervised by Taryn Shepperd

Introduction

Despite mutual recognition of the importance of US-China relations, uncertainty about each other's intentions and positions has made managing the relationship difficult for both countries. To reduce uncertainty, academics in the US looked to create overarching identities that would help predict behavior. This is exemplified in the 1990's through the China Threat Theory literature and in the 2010's through US' Pivot to Asia.

1990's

In the 1990's, the China Threat Theory emerged in academia to help US policymakers understand China without the context of the Cold War. It posited as fact that China's rise posed a threat to the US and the Western international system. Academics in China responded negatively to reading this literature and subsequent nationalistic feelings took on an anti-American tone. Such hostility is thus reactionary, a consequence of perceived hostility from the US rather ingrained or inevitable as the theory suggested.

2010's

The events of the 2000's. such as the 2008 financial crisis, shook the foundations of US leadership and resulted in a reevaluation of US foreign policy. The Pivot to Asia strengthened American commitment to being an enforcer of its system of values in the region, specifically pushing for Chinese compliance to international laws. With the US self-identifying on the international order, China was put in a position to comply or seem revisionist. China felt, however, that it had done enough to be cooperative and continued US hostility was taken as proof of the unavoidability of antagonistic relationships.

Conclusion

If current policies continue, it is likely that a security paradox will emerge, whereby both countries exercise defensive acts perceived as offensive. To avoid such a scenario, it is suggested that each country must recognize that the assigning of identities can result in problematic interpretations of actions to support that identity. Allowing the other country more flexibility in identity and working constructively to build a new framework of shared values are methods towards such a more trusting and cooperative relationships. Uncertainty may be inevitable, but hostility is not.

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Challenged by environmental issues in Beijing from the ordinary people's points of view

Aims

- What are the ordinary people's views of the environment and environmental issues?
- How do they do about environmental issues, esp. air pollution?
- Why might they think and act in these ways?

Methods

I conducted **two-month-fieldwork** in Beijing, during which I was co-living with a **rural migrant family and their community**, and volunteering in an **environmentalist café** and an **organic farm** to participate and learn about people's daily routines, concerns in life and human-environment relations.

Additionally, I **interviewed** and **surveyed** about two hundred people in three **public parks** to obtain a more representative view of environmental issues.

Summary

- The living environment was a top concern societally. While most people perceived the lack of individual awareness and behaviors as the main cause of environmental issues, **they assigned the role of problem solving to the government. The extent of public responsible actions was limited**, as most people took adaptation strategies such as using air masks to protect themselves.

- I reckoned two main factors that might have influenced people's views and actions towards environmental issues:

  ① Confucius values of **children** and public discourses such as the one on human quality might have reinforced **the family unit and made it a site of intensive capital accumulation** (Anagnost 2004). With a strong emphasis on private matters, it may be harder for people to act in a more publicly responsible way.

  ② Additionally, as the air problem belongs to **the realm of *tian* (sky)**, which also means **the highest position in the cosmological order**, the ordinary people might feel **inadequate** to directly speak and act on air pollution, thereby requiring a representative with higher position to cope with it. *There was also a **familial view of the nation** which perceives the government as a managing parent.

- The above findings could offer some perspectives on how to better facilitate the process of encouraging more participation from the general public.

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