

Conference Proceedings

“Intersections of Knowledge”

Resilience through Research

UNE Postgraduate Conference 2019

15<sup>th</sup> and 16<sup>th</sup> January 2019  
Resource Management Building  
University of New England



## Acknowledgements

**Philip Thomas** – UNE Research Services chair and convenor

It has again been a privilege and honour to chair the organising committee and convene this 2019 Conference. As always, the task has only been made possible, through the hard work of our committee members from across the University. This includes the outstanding contribution from Ms Kerry Gleeson IT Trainer from the Information Technology Directorate and the Research Services Directorate HDR team

**Postgraduate Conference Organising Committee:** –

Kerry Gleeson, Elizabeth Davies, Bethany Ayres, Olivia Kentish, Julie Orr, Michael Hoult, Sarah Burrows, Eleanor Colla, Sheeraz Ahmad, Min Pokrel, Jenny Evans

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**Sponsor:** In appreciation of financial support: Student Services and Amenities Fee (SSAF) and the Research Services Directorate





On behalf of the conference organising committee, it is my pleasure to welcome you to the 4th “Intersections of Knowledge” – “Resilience through Research” Postgraduate Conference. We must always acknowledge that this event continues to be offered “free” to UNE postgraduate researchers through the ongoing support of our university, the commitment of individual professional and academic staff and the participation of postgraduate candidates and their supervisors. This year we would also like to acknowledge the financial support, received through a successful funding application, from the Student Services and Amenities Fee (SSAF). This support has allowed us to enhance the student training and education components of your conference.

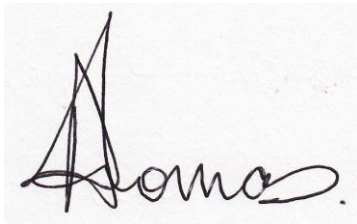
The sub-theme of this year’s conference is “Resilience through Research”, which prompts an acknowledgment of the importance and the empowerment that the creation and utilisation of new knowledge provides individuals and society. Resilience, or the capacity to adapt and thrive in a changing environment, is achieved through the discovery and application of new ways of perceiving and operating within our world. Within your contribution to the conference, take a moment to recognise how your research might be contributing to “resilience”.

Your conference is a forum which offers the opportunity to experience and practice a range of skills that will be useful as you progress within your degree and into your career. To the participating candidates, thank you for accepting this opportunity to: prepare and present your research in a friendly conference setting; share your research across the university; hear how researchers from other disciplines are approaching their research and; how research practices are carried out in different contexts. It is worth noting that your preparation and presentation could well provide an opportunity to target attendance at an international conference and possibly be the precursor to the creation of another publication.

Every year the interest in the Intersections of Knowledge Conference increases and the challenge of combining the mix of research presentations submitted into a two-day program is not insignificant. The rich mix of research presented here provides a fantastic and novel opportunity for researchers and delegates to identify new skills and possible problem solving approaches, from across the research carried out at our university. Within this excellent networking opportunity, take time to step outside your discipline area and listen to a presentation that is not directly in your interest or discipline area.

This year we have again looked to provide delegates with accounts of the experiences of professionals that are themselves university graduates and are now working in their chosen professional fields. Please make a point of attending our Keynote and Special Presentations as they will reveal insights based on real experiences of careers that have been built on the foundation of skills acquired within the acquisition of a university degree.

I trust you enjoy your 2019 Postgraduate Conference.

A handwritten signature in black ink on a light-colored background. The signature is stylized and appears to read 'Philip Thomas'.

Dr Philip Thomas  
UNE HDR Coordinator

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# **Abstracts by Streams and Sessions**

## **STREAM ONE**

- Session One - Arts Collective
- Session Two - Education
- Session Three - Health
- Session Four - Agriculture Collective



## **Session One – Arts Collective**



# **Extant Theatre: A Practical Analogy of Heidegger's Alchemical, Existentialist Phenomenology**

Rob Doran

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School of Humanities, Arts & Social Science

*Oral Presentation*

In *Being and Time* (1927) Heidegger's concept of Dasein included potentiality of realising being: consciously relating to given situations and circumstances; attentive concern or comportment toward other subjects; surfing the flux of moods affected through the experience of being; and the potentiality of being to inform, direct, shape and affect the future experience of being itself. In this paper I will argue that these are all qualities inherent to the practice of theatre, itself a medium of practical philosophy. Theatre aims to realise existential temporal presence, through flesh and blood being, witnessed not only by the audient viewer, but in the experience of the players as extant characters themselves. Actions of the players exist as being there in temporal space, in a synthesis of intending acts on the plane of existence (Tassi, 1995). This is an imperative of theatre, relying wholly on acts directly interpreted through the witness of audience and the players present in being and time: you have to be there, at that time, to experience it. The very nature of Dasein suggests that characters, players and witnesses singularly forged in a present narrative at a given time hold the opportunity and potential to perceive, if not actualise, their own perspectives in wholly different outcomes and relationships to the world they are manifest within. Through the creative practice research project of writing *Extant Theatre*, I will deploy Heidegger's concept of Dasein in triangulating diverse perspectives around the global theme of people movement, in search of realising a shared singularity of being there. For this paper, as a preliminary showing, I will articulate my initial literary review in the field of Heidegger's work and its formative impact on the trilogy of plays I propose for *Extant Theatre*.

Keywords: Heidegger, Phenomenology, Existentialism, Alchemy, Dasein, Mobility

Research methods: Qualitative, Mixed Methods

## **Impact at Sea: Societal Sensibilities in Late Victorian Australia**

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School of Humanities, Arts & Social Science

### *Oral Presentation*

On the evening of 8 December 1886 two coastal steamships collided off the coast of Coffs Harbour, NSW which resulted in severe damage to the SS Helen Nicoll, the sinking of the SS Keilawarra and the loss of around forty lives. Lying at 75 metres below sea-level, the Keilawarra is one of the more intact shipwrecks in NSW and her story remains a fascinating narrative, however nothing further of the incident has been examined. This unique case study investigates responses to the disaster by those on-board the ships during and after the collision by examining their lives, along with reactions to the occurrence by the general public. It is a history of emotions, a prosopographical and phenomenological study of people as individuals and as a collective during a time of crisis. Themes of risk-taking, tensions, bias, and judgement mix with technological development, communication and perception. It examines the resilience of the people in the late 19th-Century, their support networks, mechanisms and institutions, contributing to our understanding of behaviours during transport-based crisis in more modern times, holding great potential in informing the future. As I work through this research, I have come to realise how this study reflects my own journey to overcome crisis, discovering the extent of my own resilience through the study of others in the discipline of history.

Keywords: Shipwreck, 19th-Century, Society, Disaster, Response

Research method: Mixed Methods

# **On Becoming a Pageant Queen: Notes from Auto-ethnographic Research**

Lisa Hackett

*Doctorate*

Faculty of Humanities, Arts, Social Science and Education (HASSE)

School of Humanities, Arts & Social Science

*Oral Presentation*

This paper is drawn from my PhD research where I incorporate an immersion study with an ethnography of people who choose to wear 1950s-style clothing. Despite the volume of research into clothing and fashion, studies tend to treat the object as an abstract; where the object is not needed to be present in the study. Thus, studies tend to focus on attitudes into clothing without ever investigating the clothing itself. To overcome this deficiency, the material culture approach calls for the object to be placed at the centre of the study and for the researcher to not only examine cultural attitudes to the object, but also examine their own responses to it. With clothing, the researcher must go one step further, wearing and experiencing the object, to walk the proverbial mile in the garments of the cultural group being studied. Despite the potential of this method, its use has been fairly limited within academia. Therefore, there are limited reports on how to undertake this line of investigation and the challenges presented to the researcher. This paper theoretically and empirically examines the use of auto-ethnography as a research method arguing that auto-ethnography is a useful complimentary method to ethnography when examining the material culture of a community.

Keywords: Material Culture, Auto-ethnography, Fashion, Clothing, Ethnography

Research methods: Qualitative, Mixed Methods

# **Acting for Resilience: Using Process Drama and Theatre to Build Resilience in Adolescents**

Cindy Sykes

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School of Arts

*Oral Presentation*

The presentation explores how a combination of Process Drama, Enhanced Forum Theatre and Verbatim Theatre performance can be utilised to assist adolescents in becoming more resilient. The framework of Participatory Action Research and Action Learning is used, with the vehicle for the research being the Acting for Resilience project; a long-term, multi-faceted, school-based program that utilises the methodologies of Process Drama, Enhanced Forum Theatre and Verbatim Theatre with the purpose of assisting a group of 23 high school students, aged between 12 and 17, to become more resilient. The study aimed to deliberately create work for/with/by the students and provide them with an experience of 'communitas', a term coined by anthropologist Victor Turner. The results from this study indicate that Process Drama can be used to help students learn about and understand resilience; Enhanced Forum Theatre can allow students to become experts on resilience through peer teaching, thereby stimulating resilience in themselves; and Verbatim Theatre can provide students with real stories of resilience where the nature of theatre allows them to identify with resilient role-models and express resilience on stage. Furthermore, the study indicates that building the resilience of key individuals can strengthen the resilience of a community as well.

Keywords: Acting for Resilience

Research method: Qualitative

## **The 1988 Regional Theatre Festival**

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*Oral Presentation*

In October 1988 the NSW Bicentennial Council in association with the Regional Theatres of New South Wales and the Australian Content Department of the Australian Elizabethan Theatre Trust presented the New South Wales Regional Theatre Festival hosted by the Q Theatre, Penrith. This was an opportunity to see theatre from around the State of New South Wales

Keywords: Regional, Theatre, New South Wales

Research methods: Mixed Methods



## **Session Two – Education & Health**



## Writing in English for an Omani Tertiary Institution

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*Oral Presentation*

Few places in the world provide a more striking example of rapid development than Oman. This progress is typified in the country's tertiary education system which was completely non-existent thirty years ago but now offers places to around 30 000 Omanis annually. To meet the demands of such a phenomenal rate of growth, Omani tertiary institutions have primarily imported syllabi and academics from foreign universities. Over time the content, delivery and assessment of the courses have inevitably evolved and adapted to the unique contexts of each particular institution. These changes are often not formalised or recorded, but simply manifest in the individual classroom and assessment practices of the teachers. This has created a situation where the teachers in the tertiary preparation programs must prepare students to meet the demands of their disciplines, without really knowing what these demands will be. These bridging programs are a key element in the overall education structure as they address the gap in skills of students exiting the Arabic medium school system and entering the English medium tertiary system. To maximise student resilience when transitioning between the two systems, it is essential that teachers empower them with specific knowledge about the work they will need to produce in their degrees. This session will present some initial findings of an investigation into the types of written answers students are typically required to produce in the first year of a Communications Degree in the Colleges of Applied Sciences in Oman, with reflections on how well the Academic Bridge Program of the college is preparing them for this degree.

Keywords: World Englishes; Tertiary Preparation Programs; TESOL

Research method: Qualitative

**Voice of Sri Lankan University Students who Learn  
English as a Second Language (ESL)**

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*Oral Presentation*

This paper builds on my PhD research, which focuses on perceived lack of English language proficiency among Sri Lankan undergraduates and graduates. My research adopts a sociocultural approach indicating learning arises in interaction and learners succeed more by engaging in interactive language learning (Aimin, 2013). I present initial findings of my PhD research conducted with the aim to explore barriers faced by Sri Lankan undergraduates who learn English as a second language (ESL). The study employed a qualitative multiple case study approach selecting three Sri Lankan national universities in order to understand obstacles and needs of those students. Focus group interviews with seventy-two university ESL students and twenty classroom observations were conducted, which allowed me to investigate their reported experiences in learning ESL. In relation to the current situation and needs of the ESL programs; pedagogical barriers, cultural practices, difficulties in skills, learning needs, and required opportunities for interaction were some of the themes identified. These students voiced a gap between their expectations and what they actually receive from their ESL program. My discourse analysis presents students' perceptions about these issues in relation to learning ESL at their universities, including the problems that they encounter. My main findings suggest that ESL learners should be provided with more practical opportunities to use English language to assist them to reach their learning expectations. The suggestions which will be made based on the students' learning experiences will contribute to build resilience of learners by developing them as competent users of English while increasing their interest in learning English. The study results will guide the Sri Lankan education system to incorporate ESL learners' needs in implementing ESL pedagogies.

Reference: Aimin, L. (2013). The Study of Second Language Acquisition Under Socio-Cultural Theory. *American Journal of Educational Research*, 1(5), 162-167. doi:10.12691/education-1-5-3

Keywords: Sri Lanka, ESL, Sociocultural Theory

Research methods: Qualitative

**Policy issues and gaps linking Practicality in STEM Education in Vietnam  
context: Building Teacher capacity using STEM partnership model**

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Nguyen Manh Thang, Hoang Xuan Tien

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*Oral Presentation*

It is acknowledged that Policy issues have a major influence on the development of science, technology, engineering and maths education (STEM) in terms of curriculum organization, pedagogy, and assessment issues. According to Education Policy, Modernization is a practical response of the Vietnamese government to the challenges of national development; therefore, it is necessary to improve students' competence to translate knowledge and theories into real-life and real-world situations. There are many kinds of actions which can strengthen STEM Education. One effective approach is to draw on the private sector through school-industry partnerships. The purpose of the project is to build a STEM partnership model consisting of a range of activities known as extra-lessons outside national curriculum. It aims to better coordinate and target this effort and sharpen the focus on the key areas where collaborative action will deliver improvements to STEM Education. The proposed vision how it will sit within the current Bill Gates Schools, that School's current STEM organization and the current Vietnamese Curriculum. "STEM partnership" is a model to develop the relationship between the schools and the local educational organizations, namely university, research institutes, industry partners, experimental laboratories and museums such as Diary Partnership Model including more than just "Biology" with two subjects integrated. In the developed simple model the real world context determines which of the academic disciplines will be involved. The text is organized into three parts consisting of Innovation Conception, Innovation Report and Reflection and Anticipation. The results of the research should help to narrow the gap when STEM education is often present in the math and science field.

Keywords: policy issues, gaps, STEM Education, partnerships

Research methods: Mixed Methods

# **The Influence of Bilingual Children in the Languages Classroom in Regional New South Wales**

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School of Education

*Oral Presentation*

Australia has a rich culture from all different nationalities and around a quarter of the population speak another language than English at home. However, the mindset of the Australian society is still characterized by monolingual thinking. The purpose of the study will be to research the impact of plurilingual students on additional language teaching in regional Australia. The study will try to answer questions like: How can plurilinguists support and influence languages teaching in Australia? Can the teaching not only be of benefit for children with more than one language but also sole English speakers? What is the plurilingual student's impact in the additional languages classroom even if their language is not taught at school? Can schools benefit from students speaking two or more languages? Is the school interested in supporting plurilingualism in general? Are there any policies in place that encourage intercultural competence? And furthermore, how can plurilinguists sustain their heritage language in a regional area like the New England with few to no other people speaking it in the community? Consequently, the study will investigate how students live their plurilingual life, how teachers and schools administer and support plurilinguists in the additional languages classroom and it will also show how bilinguals manage to be resilient in a monolingual world.

Keywords: Bilingualism, Languages Classroom, Regional Australia, Teacher

Research methods: Mixed Methods

## **Intentional Rounding - Student Perspectives: A Cross-Sectional Survey**

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School of Health

*Oral Presentation*

**Introduction:** Intentional rounding is a practice currently utilised in many health services across NSW health and beyond, as a means of anticipating and predicting care needs, and ensuring patient safety and satisfaction. Many areas formalise this intervention by way of checklists and tick boxes to prompt and remind, and to ensure that patients are being regularly checked on. Student nurses are often part of this practice whilst on clinical placement, but do not always have the education and understanding behind such a practice. Rather, they are either told to go and do it, or are not involved. **Methods:** A multisite cross-sectional study was conducted to understand pre-registration nursing students' perceptions and exposure to the practice, in an effort to see where improvements could be made. A previously tested survey was distributed to students from 5 different universities across Australia. **Results:** Students found intentional rounding on the whole to be a positive experience and felt that it enhanced their organisation and communication skills if they were involved. There was however a deficit in education surrounding intentional rounding for pre-registration students from both the university and clinical sectors. Students' perceptions were influenced by their previous experience, role modelling practices of their mentor/ buddy nurses, and their level of confidence. This has future implications on the way that we educate and involve our student nurses, so that they can carry on this and other interventions successfully.

**Keywords:** Student, Nursing, Intentional Rounding,

**Research method:** Mixed Methods



## **Session Three – Health**



## **Health Professionals as Mothers of Adult Children with Schizophrenia**

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*Oral Presentation*

According to the World Health Organization (2016) there are 21 million people diagnosed with schizophrenia. Parents play a vital role in the support of their loved ones who have this lifelong condition and studies indicate that mothers are their primary carers (Klages et al 2017). Health professionals have children too, and if their adult son or daughter is diagnosed with schizophrenia, their parental responsibility changes. The dual role of a health professional and mother may be incredibly difficult to navigate for emotional, ethical, practical and institutional reasons. This research project, which is currently under way, aims to gain a deep insight and understanding into the stories and experiences of health professionals who are mothers of a son or daughter with schizophrenia. The project has the potential to inform and guide mental health nurses and health care professionals who will be able to use the findings to improve services for people with schizophrenia as well as their family members.

Keywords: schizophrenia, mothers, nursing, health professionals

Research methods: Qualitative

# **Students Nurses Attitudes, Perceptions and Experiences towards Primary Healthcare**

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*Oral Presentation*

**INTRODUCTION** Due to aging populations and a changing healthcare demographic which includes increasing prevalence of chronic disease and increasing pressures associated with health technology, there is a need to ensure healthcare service delivery is effectively integrated. For this reason, it is essential to prepare the student nurse for a healthcare system with changing workforce priorities that are less focused upon acute service delivery as the primary method of healthcare. The aim of this study was to explore the experiences and perceptions of student nurses towards primary healthcare. **METHODS:** This study employed an exploratory qualitative research design. Purposive sampling was used to recruit current student nurses, across two separate degrees of study, who attended a clinical placement at a primary healthcare clinic. Data was collected through semi-structured interviews, with interview transcripts analysed thematically and organised according to the Preconceptions in Learning Framework. **RESULTS:** Themes were organised under the following headings as is consistent with the framework employed Preconceptions refers to the varied preconceived ideas student nurses hold towards primary healthcare which are often incomplete. Learning is the confrontation of preconceived ideas, which occurs as a result of the primary healthcare clinical placement experience the student nurse attends. Knowledge is the developed understanding the student nurse has towards primary healthcare that occurs as a result of preconceived ideas being confronted within the clinical placement experience. **CONCLUSION:** To support the student nurse in their learning within primary healthcare it is essential to first understand the student perceptions and the experiences they have while on clinical placement within the setting. This allows clinical and academic educators to provide structured learning which better enables the student nurse to practice within a diverse range of settings.

Keywords: Primary Healthcare, Clinical Education, Nursing

Research method: Qualitative

# **Protocol for Systematic Review of Women's Health Related Vulnerabilities in Disaster Prone Areas**

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*Oral Presentation*

This systematic review aims to identify the evidence of women's physical and psychological health vulnerabilities in natural disasters prone areas. The acronym PICO will be used to derive search terms for designing research questions by identifying population, intervention, and context. This systematic review will include both qualitative, quantitative, and mixed method studies. In preliminary search phase, databases of prospectively registered systematic reviews, JBI and PROSPERO already been searched to identify whether the proposed review has already been conducted in a similar area. Hereafter, electronic databases such as PsychINFO, CINAHL, ProQuest, PubMed Central, and ProQuest Health and Medicine will be searched to identify peer-reviewed empirical studies (which focused on women's physical and psychological health issues following natural disasters) published in English between July 2008 – June 2018. The full process will be documented according to PRISMA guidelines and in accordance with Joanna Briggs Institute (2014) systematic review manual. A standardized data extraction tool will be developed to record information about the selected studies. The quality appraisal will be undertaken for all studies using standard quality appraisal tools and risk of bias will be identified in each study. Quantitative data will look for statistical intervention outcomes while thematic analysis will be used for qualitative data. Synthesis of both data sets will be undertaken using a narrative approach. Knowledge gaps will be identified through this review about women's health vulnerabilities in disaster-prone areas from a global perspective.

Keywords: Women; Health; Natural Disaster, Vulnerability

Research method: Mixed Methods

# **Understanding and Exploring the Experiences of Firefighters Exposed to Suicide**

Tara Lal

Special Presentation: Confirmation of Candidature

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*Oral Presentation*

Suicide has increasingly been recognized as one of the most profound and ubiquitous public health issues facing the modern world. Globally over 800,000 people take their own lives every year. For every suicide death it is currently estimated that between 10-135 people are directly impacted. Emergency service workers and specifically firefighters have higher rates of exposure to suicide death and attempt than the general population. Research has consistently demonstrated that exposure to suicide and particularly cumulative exposure is associated with negative psychological and social sequelae. There remains a dearth of understanding of the qualitative experiences of those affected. Little is known about historical, cultural and social contexts in which firefighters' experience exposure to suicide. The current research base fails to capture the rich texture and depth of human and particularly firefighter experience. By hearing the voices and stories of firefighters, this study seeks to explain and understand the interplay between multiple factors and how they influence firefighters' experiences of suicide and their mental health and wellbeing. In order to address the research problem with inclusivity and expansiveness the study takes a narrative theoretical perspective, using narrative inquiry methodology. The sample population will be drawn from Fire and Rescue NSW professional firefighters. Data to be collected using in depth interviewing of 20-30 firefighters to achieve data saturation. Data analysis will be informed by an interpretive holistic thematic approach using an iterative and emergent process attending to narrative content and form. The knowledge derived from this study will be used to drive and inform guidelines for the development of evidence informed postvention programs and resources to support firefighters exposed to suicide.

Keywords: Suicide, Firefighters, Postvention, Exposure

Research methods: Qualitative

## **Session Four – Agriculture Collective**



## **Common Weeds in Seed Banks of Vegetable Fields of Australia**

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School of Environmental & Rural Science

*Oral Presentation*

Soil seed banks form a key source of weed infestation in vegetable crops as weed seeds can survive in the soil for decades and give rise to weed plants year after year. It is important to understand the overall weed seed bank status and dynamics to design effective weed management strategies. To study the size and distribution of weed seed banks in vegetable fields, a survey was carried out across seven States and Territories of Australia. Soil samples were collected from 36 vegetable farms to a depth of 20cm. Weed seeds for three depth categories (0-5 cm, 5-10 cm and 10-20 cm) from each farm were counted using the seedling emergence method and identified to species or genus level. A total of 45 dicotyledonous and 22 monocotyledonous species were recorded in soil seed banks. The five most widely distributed species were *Portulaca oleracea*, *Chenopodium album*, *Solanum nigrum*, *Polygonum aviculare* and *Echinochloa* spp. which were reported in 39, 33, 31, 28 and 28% of the survey sites respectively. Density of weed seed in soil was highest for *Oldenlandia corymbosa* (392 seeds/m<sup>2</sup>) which was reported only in the Northern Territory (NT). Seed density of *P. oleracea*, the most widely distributed species, averaged only 146 seeds/m<sup>2</sup>. Mean seed bank densities were highest in the NT for both dicotyledonous species (2,971 seeds/m<sup>2</sup>) and monocotyledonous species (3,251 seeds/m<sup>2</sup>). On an average, dicotyledonous weed seeds were more abundant (987 seeds/m<sup>2</sup>) than monocotyledons (805 seeds/m<sup>2</sup>). Both weed types had larger seed bank densities in the 0-5cm soil layer than the other two depth categories. The preliminary results indicate that weed management strategies be focused more on depleting the seed bank on the surface layers.

Keywords: Weed, Dicots, Monocots, Abundance

Research method: Quantitative

## **Reducing Water Evaporation Using an Innovative Nanoparticle Layer**

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*Oral Presentation*

Abstract Environmental conditions have potential impact on storage of water in reservoirs and the availability of water resources. For example, measurements that have been done in Australia showed that 95% of the rainfall is evaporated, which affects the available water storage. This work aims to determine the existence of any potential evaporation inhibition properties of the microsphere monolayer as well as determining the best method of spreading polymer nanoparticles (Ropaque Polymer) over the surface of a water body. This research investigated two processes. The first step was to apply the prepared polymer particle to the surface of the water in a manufactured water tank connected to a weather station, and to record environmental conditions such as temperature, humidity, rain and wind speed. The second step was analysis of the evaporation data from the water tank and then comparison with experimental control results. The rate of evaporation when Ropaque polymer is applied to the water surface was reduced by 40% compared with the control over a wide range of wind speeds. The results show that polymer nanoparticles have a significant effect and the potential to be used in large-scale reservoirs for reducing water evaporation and providing efficient water security.

Keywords: Water Storage, Evaporation, Ropaque Polymer

Research method: Mixed Methods

# **Investigating Contradictory Findings Related to Production of the Plant Hormone Auxin and its Relationship with Grain Weight in Wheat**

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*Oral Presentation*

Grain number and weight are two key factors that influence wheat production. Both are regulated by hormone signalling in developing grains. The hormone auxin, or indole-3-acetic acid (IAA) is particularly important for grain filling. Most publications have shown a positive correlation between IAA and grain weight in cereals. However, two publications on the THOUSAND GRAIN WEIGHT 6 (TGW6) gene in rice and wheat have shown a negative correlation. TGW6 encodes a protein that releases IAA from its inactive glucose conjugate. Both papers have reported that inactive TGW6 alleles result in lower IAA levels in grains and higher grain weight. The TGW6 work has however overlooked the major source of IAA in grains. The main pathway for IAA production starts with tryptophan which is converted to IAA using the products of two genes TAR encoding Tryptophan aminotransferase and YUCCA encoding indole pyruvate monooxygenase. My project is investigating the relative contributions of the TAR/YUCCA and the TGW6 pathway to IAA in developing wheat grains. As the genome of wheat has recently been released there have been no comprehensive studies of TAR, YUCCA or TGW6 genes and their expression in this crop. Thus, my aim was to find all IAA biosynthesis genes and measure their activity in developing wheat grains. Three different copies of each gene can be expected because wheat is a hexaploid crop. We found 15 TAR genes of which one group of three are highly active in grains. Out of 12 grain-specific YUCCA, two groups of three have high expression. The increase in TAR and YUCCA expression coincides with both IAA and starch production in grains. Similar results were also found in rice from our laboratory. All these results indicate that the TAR/YUCCA pathway is probably more important than TGW6 pathway for IAA production in developing wheat grains.

Keywords: Wheat, Grain Fill, Auxin, Gene Expression

Research method: Quantitative

# **Immobilisation of Arsenic and Antimony: Can we Effectively Reduce the Bioavailability of Metalloids in Soils?**

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*Oral Presentation*

Arsenic (As) and antimony (Sb) are metalloids which exhibit toxic properties in the environment. In soils they mostly occur naturally at low concentrations, although this can be significantly elevated in both aquatic and terrestrial food chains as a result of dispersion from anthropogenic sources, e.g. mining activities. Bioavailability is defined as the degree to which chemicals present in the soil matrix may be absorbed or metabolised by human or ecological receptors or are available for interaction with biological systems (ISO/11074, 2005). Both As and Sb can endanger human health, and so numerous attempts have been made to establish technologies and methods of remedial action for remediation of metalloid contaminated soils with the use of an array of in situ and ex situ technologies. Immobilisation is based on inactivation or chemical immobilization of metals in soils and consequently reducing bioavailability (for biota) and bioaccessibility (for human) of contaminants through the formation of low-solubility minerals or precipitates by means of soil amendments (Bagherifam et al., 2014). In this study, the efficacy of a wide range of synthetic materials including organoclays, Layered Double Hydroxides (LDHs), LDH-biochar composites, iron-coated clays and lanthanum-doped biochars for immobilisation and reducing the bioavailability of As and Sb are investigated. The results of primary adsorption experiments showed considerable variations in the efficacy of different materials for the removal of As and Sb from aqueous solutions and therefore some of the selected materials might be used as potential treatments for immobilisation of metalloids in soils.

**Keywords:** Bioavailability, Arsenic, Antimony, Immobilisation

**Research method:** Mixed Methods

**Developing an Institutional Working Mechanism for the Production and  
Adoption of Health-Tested Citrus Seedlings – Confronting Citrus  
Haunglongbing in Bhutan**

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*Oral Presentation*

The survival of the Bhutanese citrus industry is currently threatened by devastating disease known as Huanglongbing (Ex- Greening disease). The use of health tested quality seedlings is one of the major strategies for increasing the production and economic return from citrus trees in farmers' orchard. However, currently production of health-tested citrus seedlings is the biggest issue and citrus seedling production has halted since 2016 due to an inability to ensure the production of quality health tested seedlings. While institutional processes and technical issues impeding nursery production system are prominent issues, limited adoption of grafted seedlings (innovation) by Bhutanese citrus growers remains as another challenge. This study is aimed at identifying and solving issues that hinder production and warranty of health-tested citrus seedlings and then adoption of grafted seedlings by the growers of Bhutan. We will use a focus group discussion approach to study the system of production for health tested citrus seedlings and deploy a farming system research approach to find out why the grafted seedlings (innovation) are unpopular and seldom adopted. The findings from the first part of the study will be used to develop an agreed institutional working mechanism which includes adapted protocols and strategies to initiate production and appropriate certification of high health status seedlings through enhanced coordination and collaboration among the institutions involved. The second part of the study will develop a policy and strategy document for guiding researchers seeking to identify key problems in innovation, development and adoption based on socio-economic factors.

Keywords: Huanglongbing, Health-tested Seedlings, Innovation, Adoption, Bhutan

Research method: Qualitative



# Abstracts by Streams and Sessions

## STREAM TWO

- Session Five – Psychology and Education  
Tough Guys  
International Innovation
- Session Six – Mixed Collection
- Session Seven – Social and Politics
- Session Eight – Agricultural collective Two  
Poultry



## **Session Five – Psychology and Educations**



**Motivational Strategies Employed to Increase Early Adolescents'  
Motivation and Engagement in Learning in Low Socio-Economic School  
Contexts in Sri Lanka**

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*Oral Presentation*

A considerable amount of early adolescents' participation and achievement in education is low in low socio-economic districts in Sri Lanka. One of the major reasons for this situation is their lack of motivation and engagement in learning. To investigate this, motivational strategies were explored in the low socio-economic context using Sinhala and Tamil-medium schools located in Monaragala and Nuwara Eliya districts in Sri Lanka. This study is based on Self-determination theory indicating intrinsic motivation is more important. Twenty-four of poorly motivated eighth-grade early adolescents were identified through the Motivation and Engagement Scale-Junior School (MES-JS), and 12 teachers and 12 principals were interviewed. Three themes were identified from the early adolescents' responses (1) raising parental awareness, (2) conducting extra classes, and (3) educational trips. Our investigation indicated that teachers and principals should take steps to improve their students' intrinsic motivation towards learning, and should increase the students' autonomy, relatedness, and competence. This was particularly important for demotivated early adolescent students. From the perspective of the early adolescents, it appears that these schools have not implemented the necessary strategies to increase their motivation and engagement in learning. According to the thematic analysis of teachers' and principals' interview responses, two common themes emerged: (1) raising parental awareness and (2) individual support. A third theme, 'short term initiatives' emerged separately. From the responses of early adolescents, teachers, and principals it was evident that some schools had introduced initiatives to increase early adolescents' motivation and engagement in learning and thereby increase their participation and achievement in learning. Those initiatives, although not strictly intrinsic motivational strategies, were predominantly adopted by the Sinhala-medium schools and were lacking in Tamil-medium schools. The results of this study highlight the need for formal intrinsic motivational strategies to be introduced in those school contexts.

Keywords: Early Adolescents, Intrinsic Motivation, Motivational Strategies

Research methods: Qualitative

## **The Long-Term Impacts of in-Country Experience: Is Exchange Worth the Risk?**

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*Oral Presentation*

Study abroad experiences are widely offered at both secondary and tertiary educational institutions. While generally held to be beneficial for language learning and personal development, there is a general lack of formal assessment of Australian exchange programs. This presentation outlines a longitudinal and retrospective study of various forms of in-country experience. It focusses on regional Australia and examines the way student exchange has actually played out in people's lives, the communities in which they live, and on the schools and universities involved over a significant number of years. It will examine benefits in terms of language acquisition, but also measure the impact of structured time abroad on personal development - including resilience, relationships and networks, work and travel opportunities, and perhaps identify unanticipated collateral gains. Various qualitative and quantitative methods of data collection will be used including surveys and interviews. Participants will include Australian, German, French and Japanese students, their families and staff from the host institutions. The findings will be presented visually in a series of graphs, and vignettes will be used to illuminate and humanise the data. It is hoped that this research will contribute to an understanding of the value of student mobility to regional Australia and inform education policy around the delivery and support of such programs.

Keywords: Impact Exchange Program Secondary Tertiary

Research method: Qualitative

## **An Aboriginal Approach to Talent Development: A case Study (Phase 1)**

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School of Education

*Oral Presentation*

Australian Aboriginal learners have a long history of underrepresentation in talent development programs for the intellectually gifted. Numerous frameworks have been proffered that can be used to explain this lack of participation. These include deficit theorising, involuntary minority status, identification issues, socio-capital deficits and epistemological differences. A number of programs have been implemented that have sought to redress one or more of these issues, and thus increase Aboriginal participation in gifted education. These initiatives, however, have tended to emphasise the Aboriginal learner's lack of socio-capital in the school context and, as such, focus on redressing skill deficits from a western educational perspective. Where Aboriginal culture and knowledge have been incorporated, it is often derived from a pan-Aboriginality ideal and is therefore over-generalised. Additionally, Aboriginal culture and knowledge are often included as an engagement vehicle, delivered in parallel to the western pedagogy and curriculum. This mixed methods case study aims to explore Yolngu (Aboriginal) conceptions of giftedness, talent and talent development, and to co-construct a talent development model that incorporates both Yolngu and western perspectives, for use in an Australian boarding school. Additionally, the study will build upon existing frameworks for meaningful engagement with Yolngu to ensure Aboriginal funds of knowledge are valued and meaningfully incorporated in talent development at the study site.

Keywords: Gifted, Talented, Education, Aboriginal, Yolngu,

Research methods: Mixed Methods



## **Session Five – Tough Guys**



## **Turtles: Toughest Critters This Side of Tardigrades**

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*Oral Presentation*

When it comes to resilience, there are few animals that can match turtles for sheer toughness. Already an ancient lineage when the dinosaurs first began to take over the world, they have survived numerous mass extinction events over the last 250 million years. A turtle's hard, bony shell and scaly hide grant them a significant degree of protection from predators. They can suffer crippling injuries and carry on. They can bear infections and contaminant loads that would kill nearly anything else. Even the shortest-lived turtle species will measure their lifespans in decades, and for some species it is measured in centuries. Sadly, 'resilient' does not mean 'invincible'; today, turtles are one of the most endangered animal groups in the world. Human pressures are the major cause of this, including consumption for meat, habitat destruction, collection for the pet trade, and introduced species. Resilient as they are, there is much to do to keep a fascinating and charismatic lineage from disappearing after a quarter billion years of existence.

Keywords: Turtle, Conservation, Resilience

Research method: Mixed Methods

## **Resilience of an Avian Species is no Miner Feat**

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School of Environmental & Rural Science

*Oral Presentation*

Gone are the days where being called "bird-brained" is an insult. Today, thanks to birds like Alex the African Grey Parrot that learnt to count, research is taking giant leaps in understanding the extent of avian intelligence. Despite this, research to date has focused on those species with large brains (e.g. ravens) due to the belief that brain size determines intellectual ability. However, not all small brained animals are 'stupid'. Noisy miners (*Manorina melanocephala*) are one of Australia's most successful avian species thanks to their cooperative, highly despotic, and frankly, psychotic behaviours. These behaviours are cognitively demanding, yet a study on only a few individuals found their brains to be relatively small. Therefore, my research aims to understand what the heck it is about the Noisy miner brain that makes it so resilient in Australia's rapidly changing environments. To achieve this, my research combines the fields of animal behaviour and neuroscience. Because if size doesn't matter, what does?

Keywords: Avian Intelligence, Cognition, Animal Behaviour, Brains

Research methods: Mixed Methods

## **Session Five –International Innovation**



## **The Journey to Establishing an Innovation Hub in a Transforming Economy - Vietnam**

Philip Dowler

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UNE Business School

*Oral Presentation*

This Innovation Portfolio Project is the identification and investigation of a model for an organisational innovation, namely, the creation of an Innovation Hub at the Royal Melbourne Institute of Technology (RMIT) Vietnam. This Innovation Hub project explores incubator hub best practise, the role of the entrepreneurial ecosystem in Vietnam, the social, economic and political factors that have created the context of Vietnam in the 2020's. And finally the role of RMIT University Vietnam in capacity building other universities and stakeholders in Vietnam, bounded by the remit of a grant proposal with the Australian Department of Foreign Affairs and Trade (DFAT). Research into the entrepreneurial and innovation ecosystem in Vietnam is limited, this research will assist in filling the gap in the literature and having broader policy implications into the future. Funding proposals from both the Vietnamese government and from foreign direct investment often seeks relevant data and validation to support grant applications, which currently is limited and weak. The model identification which will be the capstone of this project should assist future scholars and policy developers in determining the factors for incubator success in Vietnam more broadly. While creating a degree of certainty for donors. The investigation is not limited to the implementation of an Incubator Hub, yet to determine if an Incubator Hub could be viable within the RMIT Vietnam context and the DFAT funding model. The primary goal of this Innovation Portfolio Project, is model identification and investigation, not simply implementation. Countries differ, cities differ, economies differ, industry trends differ, and there are potentially multiple factors which could lead to incubator success or failure. I hypothesise that Incubator success is different in every context and that incubators need to be contextualised, this research will test my hypothesis, by using a practical Action Research approach.

Keywords: Innovation Hubs Vietnam Incubators Ecosystem

Research methods: Qualitative

# **New Product Development Strategy for Selling High Value Nusa Tenggara Barat (NTB) Beef in Selected Urban Markets in Indonesia**

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*Oral Presentation*

Indonesia has a population of 250 million people with a beef consumption that reached 2.6 kg per capita in 2016, and it is expected to keep raising due to shifts in consumer preference for beef. Around 15 percent of the total beef demand is high-quality beef demand, but the majority is fulfilled by imported beef. Nevertheless, Nusa Tenggara Barat (NTB) province is one of the biggest cattle producer in Indonesia, with the potential to supply high quality beef as the majority of cattle raised in NTB is Bali breed that has a good carcass percentage and high nutritional value when the cattle is raised free range. Therefore, this beef has the potential to be differentiated and increase the profits of the local industry. However, the beef industry in NTB has been unable to position differentiated beef in urban markets in Indonesia. Hence, this research using quantitative and qualitative methods aims to develop a new product development strategy to sell NTB beef considering consumer preferences, their willingness to pay premium, and the current conditions of the local industry. Quantitative methods using consumer survey will be conducted to identify key attributes of differentiated beef and consumers willingness to pay more for differentiated beef products. Consumer surveys will be conducted in cities in Java Island, which are the biggest beef markets in Indonesia. Further, qualitative methods using interviews with stakeholders of the beef chain will be conducted to consider the current conditions and opportunities in each channel. Results of this study will present a recommendation of a new product development to help the local industry selling NTB beef in selected markets in Indonesia maximizing their profits.

Keywords: New Product Development, Consumer Preferences, Beef

Research methods: Mixed Methods

## **Session Six – Mixed Collection**



# **Intensifying Financial Inclusion through the Provision of Financial Literacy Training: A Gendered Perspective**

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*Oral Presentation*

This study examines the impact of financial literacy training on the intensity of financial inclusion. Using a randomised control trial, we developed a new framework to show the stages of change of financial literacy into financial inclusion. An additive index of financial inclusion and a multi-dimensional measure of financial literacy (using OECD's KAP principle), along with different covariates are used to estimate various micro-econometric models including the random-effects Poisson and population-averaged Poisson; and random-effects probit and pooled probit regressions. Our findings reveal that whilst females tend to save more, males are found to have more access to credit, receive more financial assistance and own more accounts. We also find that beneficiaries of financial literacy training are about 10% more likely to intensify their levels of financial inclusion and the impact is more profound in the urban areas for females. Apart from training, improvement in financial literacy score of rural folks intensifies financial inclusion for females than males whilst in the urban areas, intensity of the effect on males is greater than that of females. The intensity of financial inclusion is largely driven by financial practice/behaviour, followed by financial knowledge and attitude respectively. We further establish the gender differential effect of financial literacy on the decomposed indicators of financial inclusion — access to credit, account ownership, savings behaviour and receipt of financial assistance. It is apparent that financial literacy can be used as a tool to bridge the gender financial inclusion gap.

Keywords: Financial Inclusion; Financial Literacy; Gender; Impact

Research methods: Quantitative

# **The World's Highest Fossil Horseshoe Crab—A Triassic Fossil from the Slovenian Alps**

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*Oral Presentation*

Horseshoe crabs are an iconic group of organisms that have survived the past 480 million years and are alive today, living along the east coasts of the USA, China and Japan. A striking feature of the horseshoe crab fossil record is the generally low diversity through time. However, after the end-Permian extinction, the Triassic horseshoe crab diversity increased dramatically. Although this phenomenon has been anecdotally documented, there has been little mathematical evidence to support the observation. In this talk, I present another Triassic horseshoe crab species—a fossil from the Slovenian Alps—and use this important and rare specimen to help explore the diversity of horseshoe crabs through time using a mathematical tool called geometric morphometrics. In doing so, I address why this group had such a prolific evolutionary event during the Triassic. Such fundamental research that combines traditional fossil description with advanced mathematical techniques allows palaeontologists to maintain their central and resilient role within the scientific community of today where analyses are the gold-standard for understanding the natural world.

Keywords: Horseshoe Crabs, Palaeontology, Geometric Morphometrics, Slovenia

Research methods: Mixed Methods

# **Spotlighting Food Production Process: Motivation, Opportunities and Pressures for Criminality**

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*Oral Presentation*

Agriculture and food production has received much public attention and academic scrutiny in the recent past. Increasingly, sociologists and criminologists have examined the nature, extent, cause and perpetrators of crimes against farmers, farms and food production. However, less attention has been devoted towards studying how food production as a business and occupation flourishes through criminal and unethical agricultural. This underscores the need for empirical investigation of the methods and activities of food production with a view to discern the social and more specifically the criminal aspects of farming. This is a major focus of the study. Six aspects of farming (labour engagement, pesticide use, disposal of pesticide containers, disposal of inappropriate farm produce and slaughter of farm animals) are chosen to illustrate crime issues in food production in rural Kenya. The study will examine factors that influence, motivate or drive farmers to violate existing laws and social norms to engage in illegal and unethical farm practices. The study will employ a mixed method approach to discern and understand the criminal character of farmers in the context of food production. A combination of case studies and descriptive research designs will be used to collect data. The key study instruments will be a survey questionnaire, observation, and in-depth interviews with farmers, farm workers, police, children protection officers, labour officers, agricultural extension officers and public health officers, agricultural business owners, livestock agents, butchers, abattoir owners, community administrators, local business leaders, small business food outlets and supermarkets. The findings will help to design widespread compliance of licit and ethical farming practices.

Keywords: Farmers, Food, Crime, Motivation, Pressures, Opportunities

Research methods: Mixed Methods

# **New Perspectives on White-box Cryptography**

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*Oral Presentation*

Current encryption processes are reliant on hardware based tamper resistant devices to provide secure operations. These hardware devices were traditionally seen as black boxes, where an attacker could only observe the intended input and output of the processes. However, it was discovered that these black-box implementations were exposing unintended output through side channels in the form of noise. This side channel information allows attackers to obtain unintended data that could be used to attack a system and expose secret information. In 2002 white-box systems were proposed to allow these tamper resistant devices to be replaced with software. The initial proposals included only symmetric encryption algorithms such as DES and AES. These proposals utilised the Feistel structure of the algorithms to construct a series of lookup tables, effectively embedding the secret key into the algorithm. These white-box systems allowed an attacker to have complete access to both the algorithm and implementation with the intention that data would be protected solely by these lookup tables. Since the initial proposal of these white-box systems, every implementation has been broken. A closer inspection of these white-box models shows an inherent weakness in the DES-Feistel structures. Even with the presence of masking and randomization, protection of the keys embedded in these algorithms has not been accomplished. This research describes models of current white-box cryptography implementations, with the intention to extend these systems to secure asymmetric cryptography schemes which do not have the same weaknesses as the DES-Feistel structure. This will remove the requirement of hardware which is currently needed for asymmetric encryption schemes. This will improve resilience by allowing secure systems to be implemented wherever software can be executed.

Keywords: Cryptography, Software Models, Tamper Resistance, White-box

Research methods: Mixed Methods

# **A River and its People: Tracing Socio-Ecological Relations in a Contested River Landscape**

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*Oral Presentation*

This paper focuses on a key research method (Net Mapping) used in my thesis to better understand a river and its people. The thesis seeks to trace the social aspects of a major collaborative river restoration programme and examines how the Nambucca River catchment came to be a contested landscape. Understanding the ‘social’ components of environmental concerns is imperative and critically important in this age of anthropomorphic led climate change. Current controversies are investigated as a means of evaluating the multiplicity of key stakeholder perspectives and the resulting social network dynamics. From the study, a framework will be developed on how to evaluate stakeholder networks and consideration given to the resulting implications for wider community engagement for river protection. As a research method, Net Mapping is at once a simple but also rich means of obtaining primary data. An overview of the method, its application in this study and expected outcomes are discussed. Adaptations of the model will be highlighted given the planned approach is an innovative advancement on current practice. In particular, attention will be drawn to the strengths of taking this line of enquiry with respect to a socio-ecological concern. Net Mapping, it will be argued, has the ability to engage a diverse array of stakeholders in a participatory, collaborative and non-threatening exercise. For the researcher, the down-to-earth hands on workings of Net Mapping makes for challenging but rewarding fieldwork. The method has broad interdisciplinary application and will be of interest to those wanting to increase the impact of their research through an understanding of the social networks at play.

Keywords: Net-Mapping, Social Ecology, River Restoration

Research methods: Qualitative

# **Numerical Filtering Techniques for Image Enhancement in Medical Imaging Computed Tomographic Reconstruction**

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*Oral Presentation*

Cone Beam CT using 2D panel detectors is finding increasing application in medical imaging, image guidance etc. However, 2D detectors are more susceptible to noise from scattered radiation than detectors used in more traditional fan-beam CT. Feldkamp filtered back-projection is one of the most efficient and most commonly-used reconstruction algorithms. Part of the algorithm involves adjusting amplitudes of different image spatial frequency components by applying a suitable filter in Fourier space (Fourier filter or "kernel"). Typically, clinical CT systems deal with image noise by modifying the Fourier filter response to adjust the attenuation or enhancement of different frequency components in the image. This choice is a compromise between minimising image noise and maximising contrast of tissue boundaries because attenuating high frequencies reduces the contrast of both noise and sharp boundaries. This project concerns developing, and applying, image filters to identify tissue boundaries within CT scan projections and selectively 'pre-enhance' tissue boundaries (in 'real-space') before Fourier filters are applied (through Feldkamp filtered back-projection). The algorithms exploit prior knowledge of properties of tissue features and boundaries to enhance boundary contrast versus noise.

Keywords: Medical Imaging; Computed Tomography; Image Enhancement

Research methods: Quantitative

# **Physical Composition of Crop and Gizzard (Plus Proventriculus) Contents of the Scavenging Local Chickens**

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The physical composition of crop and gizzard (plus proventriculus) contents of the scavenging local chickens was assessed to establish daily feed basket for these chickens. A total of 56 chickens of both sexes were assessed in the wet and the dry season, in Lilongwe District, Malawi. The chickens were between 15 and 20 weeks of age. Female chickens were those that had not yet reached the laying phase. The chickens were randomly caught while scavenging in the afternoon between 14:30 and 17:00 hours, were weighed and immediately slaughtered by cervical dislocation. These were de-feathered and eviscerated in the laboratory, and crop and gizzard (plus proventriculus) were harvested and weighed. The contents were emptied, weighed, and physically identified. Data were analysed using the general linear model of the analysis of variance through Minitab 17. The results showed that live weights of male and female chickens in both seasons were not different ( $p > 0.05$ ). In the wet season the live weight of male and female chickens were  $1059.6 \pm 274.6$  g and  $1061.5 \pm 218.8$  g, respectively, and in the dry season,  $1295.8 \pm 426.3$  g and  $1166.3 \pm 293.0$  g for male and female chickens, respectively. Crop and gizzard contents included grains, household food leftover, plant material, insects/worms, grit, and non-identified materials. Season and sex did not influence weight of crop or gizzard ( $p > 0.05$ ), and types of feedstuffs in crop and gizzard contents were also the same between the two seasons and sexes, although quantities were different. The quantity of maize grain and household food leftover was higher in the dry season, than in the wet season. Green material, on the other hand, was higher during the wet season than in the dry season. It is concluded that season influenced the quality of the scavenging feed resources.

Keywords: Crop Contents, Gizzard Plus Proventriculus Contents, Local Chickens, Physical Composition, Scavenging

Research method: Qualitative, Quantitative



## **Session Seven – Social and Politics**



# **Linkages between Political Parties and Political Violence: Some Lessons for Peacebuilding from Kenya and South Africa**

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*Oral Presentation*

Political struggles and competitions are conflictual by their very nature, and if not well managed can lead to violence. As political parties are crucial actors in political processes, it is vital to understand the roles they play in escalating or de-escalating political violence. This paper uses tenets of social cohesion as a multi-disciplinary topic, with support of the social identity theory to provide an analysis of political parties in Kenya and South Africa, and their linkages to political violence. It concludes that political parties are indispensable actors in sustainable peacebuilding. It therefore asserts that the design and implementation of peacebuilding interventions that effectively target political violence must anticipate the involvement of political parties. This applies to the contexts of Kenya and South Africa, but most probably to other countries in the continent.

Keywords: Political Parties; Violence; Kenya; South Africa

Research methods: Qualitative

# **Rebooting Social Defence: An Anarchist Ethnography of Agroecology**

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*Oral Presentation*

To get amongst the intersections of knowledge that my topic is situated within, I bring food and the crisis of agriculture to the radical centre of my research. Food is vital to human society. As a matter of survival, it brings people into contact with their own existence and the cultural values, stories and rituals that inform their particular understanding of reality, or ontological orientation to the world in which they live. recently the intersections of knowledge that make my research possible divide people via the supposed authority of truth, and/or what militaries now call information wars. This divisive current is evident in the phenomenon of food wars and it can be seen in the competing discourses of food security vis-a-vis food sovereignty and representative democracy versus earth democracy or participatory anarchist democracy. All the while, food systems are killing vital systems of the earth and people are left to die, as we humans hurtle into an emergent Anthropocene; a new geological age beset with climate change and rising levels of inequality and war. Resilience is definitely required. My research engages with what key nonviolence researcher Brian Martin called the radical potential of social defence, which is, as an alternative to the military. This alternative if ever taken up democratically would render the division between civilian and its others, obsolete. It presents a possibility that this research sets out to confront. My research asks, what can be learned from the alternative cultures of agroecology/permaculture and anarchism, about the radical potential of social defence? While I cannot predict what might be learned, I do intend to apply what is learned to what is currently known about the possibility of social defence.

Keywords: Agroecology, Anarchism, Social Defence.

Research methods: Qualitative

# **Hybrid Political Construction of Post-Conflict Peacebuilding in Bangladesh**

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*Oral Presentation*

The PhD thesis is a pioneering critical interplay between liberal and hybrid peacebuilding in the context of post-accord Chittagong Hill Tracts (CHT) in Bangladesh. It aims at examining and exploring what are the inherent flaws of such peacebuilding generations that could be responsible for post-accord CHT intractability. The hypothesis is centered broadly upon the narrative of modernity, development and two such peacebuilding generations. The thesis identifies modernisation trends as overwhelming and encounters it with uncompromising indigeneity. This is, of course, both an opportunity and a danger to chase the modernization and narratives in applying post-conflict environment to examine peacebuilding effectiveness.

Keywords: Hybrid Peace, Peace Infrastructures, Structural Violence

Research methods: Mixed Methods

# **Estranged Political Relationships and the Root Causes of Violent Conflict in South Sudan**

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*Oral Presentation*

The failure of peace agreements and the subsequent perpetuation of civil war in South Sudan are sustained by the failure of the potential mediators to understand the multi-casual levels of the conflict. Such an understanding of the various casual levels of the conflict can form the basis for a successful and durable peace agreement, breaking the cycle of violence. To investigate the problem, semi-structured in-depth interviews were conducted with 27 major stakeholders, including the conflict parties, the mediators, eminent South Sudanese personalities, scholars and civil society organization leaders. The results were grouped into four major themes: power struggles, ethnic violence (not covered in this article), estranged political relationships, and historical conflicts and grievances. The results suggest that the four themes function at three sequential dimensions, the primary, secondary and tertiary dimensions. Estranged political relationships at the secondary level, characterized by fear, anger, bitterness, distrust and the urge for revenge, are born out of historical conflicts that were unresolved at the primary level. At the tertiary level, power struggles and ethnic violence are motivated by estranged political relationships. Dealing with the estrangements, therefore, forms the basis in which historical conflicts can be addressed towards lasting agreements and sustainable peace in South Sudan.

Keywords: Power Struggles; Estranged Political Relationships;

Research method: Qualitative

**What is an Ethnic Street? Land-use and Built-form Characteristics of  
Super-diverse Shopping Streets around Bankstown, Sydney**

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*Oral Presentation*

This paper compares built-form features of eight culturally diverse retailing centres in the western suburbs of Sydney, Australia, with a view to exploring the common assumption that immigrants modify shopping streets in distinctive ways, and that these “differences” might be best read as “expressions” of an underlying “identity”. Drawing on Baudrillard’s understanding of the consumer society, it argues that any “differences” might be as easily assimilated to the logic of western consumption as they might be read as representative of particular cultural identities. The paper concludes by considering what might be at stake in the determination of these “differences”.

Keywords: Baudrillard, Urban Design, Consumption, Ethnic Diversity

Research methods: Quantitative

## **Middle Class Radicalization in Bangladesh**

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*Oral Presentation*

Bangladesh, the third largest Muslim country of the world, is beginning to be depicted as a hub for Islamist militancy, which is attracting media as well as academic examination. Yet Islamic militancy is not a new phenomenon in Bangladesh. Indeed, a number of Islamic militant groups have been operating in Bangladesh since the mid-1990s. Islamic Militants are reported to have killed around 156 people in the country between March 1999 and January 2005, for instance. And on 17 August 2005, the country was deeply shocked by a series of 459 bomb attacks that took place in 63 out of 64 districts of the country. While Islamic militancy has clearly posed a serious challenge in the past, it constitutes an even more obvious and present danger to Bangladesh now. Some recent reports revealed that most of the militants belonged to upper middle class and were well educated, some having studied in secular institutions outside Bangladesh and not attended madrassas. This has cast serious doubt about the generally held views that 'poverty breeds extremism', 'deprivation encourages individuals to join militancy' and 'Madrassas are the incubators of terrorism'. Therefore, this paper looks at the driving factors of middle class radicalization, using data from interviews and by looking at IS and Al Qaeda online propaganda.

Keywords: Radicalization, Middle Class, Bangladesh

Research method: Qualitative

## **The Changi Experience - AIF Command and Staff in a Unique Situation**

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*Oral Presentation*

Many misunderstandings and myths exist about Changi POW Camp. Those meriting recognition include - 1. Allied military organisations continued to control operations of the camp (until mid-1944) The 1929 Geneva Conventions did not apply since Japan did not ratify them: The Hague Conventions 1909 (despite their flaws) applied. 3. Brutal treatment of POW generally occurred outside Changi on work parties and Forces up-country or overseas. 4. POW who worked were paid, and levies placed on 'pay' so sick and unfit had money for Canteen purchases etc. 5. Vegetables grown in the Camp Gardens, were issued as part of rations (the AIF separately ran Gardens requiring all available to contribute one hour a day labour). 6. Rice was the basic ration (around 500 grams per day until 1945), adjusting to it in the diet took time; innovative cooking recipes helped) 7. Specific diseases were common; dietary deficiency (especially Vitamin B) monitored and treated where possible. 8. While health problems were closely monitored by Allied doctors, but the Japanese often ignored reports. 9. Changi POW Camp was often better than other Japanese POW Camps.

Keywords: POW Changi Singapore

Research method: Mixed Methods



## **Session Eight – Agriculture Collective Two**



# **Olfactory Cues: A Possible Mechanism of Resource Selection in Dung Beetles**

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*Oral Presentation*

Dung beetles relocate the manure quickly after finding it, either by burying it under the soil, or rolling it away from the dung pat for feeding and/or nest building. This way, they provide several important ecosystem processes including nutrient cycling, bioturbation, seed dispersal, and pest control. But all these key roles hinge on beetles being attracted to dung in the first place; and they appear highly selective. Few field and laboratory studies have assessed both the selection of a particular dung type and attraction towards particular volatiles of dung resources by dung beetles. The mechanism of resource selection in dung beetles is thought to be based on their ability to detect and discriminate between different odours, however this is not fully understood. Here we address the question: What olfactory cues does a dung beetle respond to when presented with different resources? We used Gas Chromatography Mass Spectroscopy analysis of cattle manure from cow dung pats collected across four different seasons in northern NSW. The seasonal comparison of fresh cattle manure for different volatiles showed a significant variation in compounds as well as their abundance. Additionally, electroantennography studies will provide the actual response of a beetle's antennae towards the specific olfaction. The output of this study is predicted to be very useful in constructing artificial diets for dung beetles. And these artificial diets could be promising for mass rearing program to breed and multiply dung beetles independent of seasonal cycles, so that land managers can have year-round access to these industrious nutrient recyclers.

Keywords: Dung

Research method: Quantitative

## **Longevity of Blady Grass (*Imperata Cylindrica*) Seeds**

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Blady grass (*Imperata cylindrica* (L.) P.Beauv.) is considered one of the 10 worst weeds globally. It has the ability to reproduce by seeds and by rhizomes, making management more difficult than if reproduction was through one method alone. Once established, it is a strong competitor for resources such as nutrients, water and light. The objective of this research was to determine the longevity of blady grass seeds in order to improve weed management. Seeds were purchased from a commercial seed supplier in May 2017, having been collected from an area near Coonabarabran in Western New South Wales (NSW) in 2015 and subsequently stored by the seed company at 10°C and 50% relative humidity. After purchase, seeds were stored at room temperature (~12–22°C) at the University of New England in Armidale, NSW. Germination testing on 16 June 2017 indicated a germination percentage of 89%. Seeds were then subsequently germinated under the same conditions on 7 November 2017 and the germination percentage had declined to 37%. This rapid decrease in germination rate during the nearly five months of storage at room temperature indicates that blady grass seed may be very short lived under field conditions in temperate areas of Australia as has been found elsewhere in the world and that sexual reproduction may play a less significant role in dispersal and establishment than plant rhizomes.

Keywords: Rhizomes, Germination, Weed

Research method: Mixed Methods

## **Effect of Plant Density on Yield and Root Traits of Two *Trifolium Subterraneum* Cultivars**

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*Trifolium subterraneum* is the most widely sown annual pasture legume in the P-deficient soils of southern Australia. Controlled-environment studies have demonstrated that variation exists between genotypes of this legume to acquire P and yield in low-P soils, and there appears to be a plant density effect on these traits. However, the magnitude of this effect is largely unknown. Two cultivars of *T. subterraneum*, that differ significantly for the aforementioned traits when using the same sowing rate, were grown to determine differences in shoot growth, P uptake and root traits with changing plant density. Micro-swards of both cultivars were grown at five plant densities and five P levels. Yield and P content of shoots and roots were determined after 5 weeks growth. Root samples were assessed for diameter, length and root hair length. Shoot dry mass of both cultivars increased in response to increasing P supply and increasing plant density. Differences between the cultivars for shoot yield were most pronounced at low plant densities and diminished as plant density increased. This response was particularly evident at lower soil-P levels, whereas maximum yield was relatively independent of plant density in the high-P soil. In contrast, differences between cultivars for root morphological traits such as specific root length were maintained regardless of plant density. The results demonstrate that plant density effects sward P-acquisition and hence shoot yield achieved in the P-deficient soil. Accurate screening for P-acquisition and shoot yield across the *T. subterraneum* genome therefore requires a uniform plant density comparable to densities observed in the field. The identification of *T. subterraneum* cultivars capable of improved growth in low-P soils would improve P-use efficiency in Australian soils which are often P-deficient and require annual applications of P fertiliser for high yields. This would consequently lead to greater resilience of the agricultural sector.

Keywords: Subterranean Clover; Root Morphology; Phosphorus

Research method: Quantitative

# **The Assemblage of Native and Introduced Dung Beetles in Paddocks along Gradients of NSW Tablelands**

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*Oral Presentation*

Dung beetles (Scarabaeoidea) are well known in Australia for controlling bush flies and livestock parasites along with efficient dung burial. To assess dung beetle assemblages along an altitudinal gradient, a seasonal dung beetle monitoring program was conducted in native and improved grassed paddocks at eight different locations along elevation gradients from 385 to 1357 m ASL in Northern NSW during the autumn, spring and summer seasons. Standard pitfall traps baited with cow, sheep and kangaroo dung were used to monitor the dung beetle assemblages. A total of 12,297 dung beetles and 23 different dung beetle species were collected: 8,951 (72.8%) constituting 17 introduced species and 3,346 (27.2%) constituting 6 native dung beetle species. The number of dung beetles captured in traps with in cow dung bait was significantly higher ( $121.3 \pm 35.9$  SE) than sheep ( $105 \pm 29.6$  SE) and kangaroo dung baits ( $29.8 \pm 8.72$  SE). Significantly more ( $185.1 \pm 41.3$  SE) dung beetles were captured in summer compared to spring ( $48.9 \pm 16.9$  SE) and autumn ( $22.2 \pm 5.3$  SE). The most abundant introduced species were *Aphodius lividus* (39.8% of all beetles collected) and *Euoniticellus fulvus* (10.8%), while *Onthophagus australis* (11.7%) and *Onthophagus granulatus* (11.6%) were the most abundant native species. The remaining 19 species comprised 26.1% of the total abundance of dung beetles. Community composition among seasons, elevations and habitat shows how the introduced and native dung beetle species are structured. The higher species richness and abundance of introduced dung beetles elucidates their success in establishment and their potential in handling dung resources in the paddocks.

Keywords: Dung Baits, Grasslands, Seasons, Native, Introduced

Research methods: Quantitative

**A Community Engagement Approach to Increase Farmer Level Adoption  
of Breeding Tools to Boost Reproductive Performance of Bali Cattle in  
NTB, Indonesia**

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*Oral Presentation*

NTB (Lombok and Sumbawa Islands) is one of the centres of beef cattle production in Indonesia, based mainly on the production of Bali cattle (*Bos javanicus*) by smallholder farmers. In Lombok, cattle are kept completely housed with cut and carry feeding using a collective housing system while in Sumbawa, cattle production is more individual and extensive, based on grazing of natural grasslands. A low calving rate, long calving interval (CI), suboptimal animal husbandry practices arising in low reproduction performance and limited access of smallholder farmers to make changes to their farming enterprise has been identified as constraints in these production systems and reasons for this may include low body condition score (BCS) of cows in dry season, failure to detect oestrus in housed systems, and bull scarcity. This research aims to improve Bali cattle reproductive performance by development and adoption of suite of breeding tools (a reproduction toolkit) including assessment and recording of BCS, improved accuracy of detection of oestrus (and thus timeliness of taking to the bull for mating), assessment of bull soundness and basic record keeping to identify issues. The project will commence with community engagement to understand the stakeholders involved, the problems they face, and their perceptions of problems of cattle reproduction and how best to deal with them, with modification of the proposed approach and toolkit in light of this. The research is expected to use close community engagement and a suite of practical tools to improve reproductive performance of Bali cattle. Success will be assessed by change in reproductive performance in participating farms/villages, the level adoption of elements of the toolkit and by the perceptions of the farmers of the costs and benefits of the innovation.

Keywords: Community, Adoption, Tools, Reproductive, Bali Cattle

Research methods: Mixed Methods



## **Session Eight – Poultry**



## **Genetic Aspects of Growth in a Dual-Purpose Thai Native Chicken**

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*Oral Presentation*

Lueng Hang Kao Kabinburi (LHKK) is a Thai native dual-purpose chicken breed, which is popular for its meat characteristics. However, LHKK is small in size, ranging in weight from 1 to 1.5 kg at almost four months of age. This study was initiated to explore the genetic control of the growth trajectory of LHKK chicken, using a random regression approach, to improve its body size. Body weights, measured in 11,588 birds from day one (BW1D) to 168 days (BW168D) in 28-days intervals were used to estimate genetic parameters. Model included fixed effects (hatch nested within year, and sex), and random effects (direct additive genetic (DA), direct permanent environmental (DPE), maternal genetic (MG), and maternal permanent environmental (MPE)). The animal ages were fitted as an orthogonal Legendre polynomial covariate. Legendre polynomial of second orders were used for all random effects along with seven classes of residual variances to estimate genetic parameters. Estimated genetic and phenotypic variances increased with increasing age. Heritabilities for DA increased from 0.02 at BW1D to 0.35 at BW168D, and heritabilities for MG decreased after BW1D. Variance ratios for DPE and MPE ranged from 0.01 to 0.40 and from 0.10 to 0.26. Genetic correlations between body weights in 28-days intervals were high, ranging from 0.79 to 1.00 for DA, and from 0.72 to 1.00 for MG. For DPE and MPE, correlations ranging from 0.59 to 1.00 and from 0.00 to 1.00. Phenotypic correlations were high (0.60 to 0.92), except between BW1D and other body weights. The moderate heritabilities and high genetic correlations between subsequent weights indicate that early measures of body weight in LHKK chicken can be used as a selection criterion in order to achieve improved growth rate of LHKK chicken.

Keywords: Genetic Parameters, Random Regression, Native Chicken

Research method: Quantitative

## **Apparent Ileal Nutrient Digestibility of Broiler Chickens Supplied Different Feed Forms Supplemented with Enzymes on Replica Tanzania-Type Diets**

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*Oral Presentation*

The study was conducted to investigate the effect of feed form and microbial enzyme supplementation on apparent ileal digestibility of nutrients in broiler chickens fed different forms of diet supplemented with microbial enzymes on Tanzania-type diets. A total of 480 day-old Ross 308 broiler chickens were offered eight dietary treatments made basically from feed ingredients that are available in Australia and commonly used in Tanzania, including maize, soybean, cottonseed and fish meals. Diets were fed as either mash or pellets and supplemented with one of two enzymes; Aextra XB (Xylanase +  $\beta$ -glucanase) and Quantum Blue (Phytase) or a combination of the two enzymes, in a 2 $\times$ 4 factorial arrangements. Each of the eight treatments was replicated six times with 10 birds per replicate. Titanium dioxide (TiO<sub>2</sub>) was added to the grower diets at 0.5% as an indigestible marker to assess the apparent ileal digestibility of dry matter (DM), gross energy (GE), starch, protein and fat. The dry matter (DM) digestibility was neither affected ( $p>0.05$ ) by feed form, nor by enzyme supplementation. The digestibility of gross energy (GE), starch, protein, and fat was higher ( $p<0.001$ ) in birds fed pelleted diets as compared to those on mash. Addition of microbial enzyme increased ( $p<0.05$ ) the digestibility of all measured nutrients. The results obtained suggested that for best nutrient digestibility it is better to feed broiler chickens with pelleted diets instead of mash. In addition, microbial enzyme supplementation supported further improvement in digestibility.

Key words: Broilers, Nutrients Digestibility, Feed Form, Enzymes.

Research method: Quantitative

# **Abstracts by Streams and Sessions**

## **STREAM THREE**

- Session Nine - Psychology
- Session Ten - Environment and Environmental Economics
- Session Eleven - Animal Production



## **Session Nine – Psychology**



## **Growing Through Giving: Mentoring For and By At-risk Young People**

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*Oral Presentation*

**Aim:** The aim of this research was to understand what motivates previously recognised at-risk young people to voluntarily mentor their at-risk peers. **Background:** Childhood trauma is strongly associated with the development of mental health disorders. The highest burden of mental health disorders lies with young people between 15-24 years who also show greatest reluctance to seek mental health care. Mentoring plays a large role in supporting young people who are considered at-risk. However, there is little evidence that supports previously recognised at-risk young person's ability to provide mentoring to their peers. This research shows that previously recognised at-risk young people can provide mentoring to their at-risk peers and has provided important insights into how and why previously recognised at-risk young people voluntarily provide mentoring to their at-risk peers. It has provided evidence that young people are capable and willing to help their peers and by doing so, alter the negative health trajectory of their mentees. **Methodology:** Using narrative inquiry, 12 previously recognised at-risk young people were asked to share their stories of providing mentoring to their at-risk peers. Narrative inquiry is valuable when researching with a vulnerable population. **Discussion:** This research has shown that previously recognised at-risk young people are motivated to mentor their at-risk peers by constructing a positive identity of self through a three-fold practice. When they start mentoring their at-risk peers they receive positive acknowledgement for their ability to rewrite their personal journey of trauma. Secondly, they learn to use their experiences to help others and thirdly, they want to help their peers, who have experienced adverse childhood trauma, move on with their lives. **Conclusion:** This study has provided important insights into some of the reasons how and why previously recognised at-risk young people engage voluntarily provide mentoring to their at-risk peers.

**Keywords:** Innovative, Conversational, Insightful

**Research methods:** Qualitative

## **Being a Prominent Woman: Resilience and Resolve in the Public Spotlight**

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*Oral Presentation*

Australian women have a long history of public advocacy on a range of social justice issues. Some women choose to enter politics to enact legislative change, whereas others choose to advocate outside formal politics. One of the major challenges faced by women in the public sphere and in leadership roles, is the much closer scrutiny women receive over men - particularly in relation to appearance, clothing, and their persona and roles seen as traditional for women, such as motherhood. It is this kind of scrutiny that requires extra resilience and resolve on their part, to surmount the additional challenges of public life. In light of this, the study asks participants that very question: How do you maintain resilience and resolve? The project seeks to understand what factors inform women decisions to enter politics or to resist formal politics, by interviewing former and current female politicians and contrasting their experiences with women who are operating as advocates outside contemporary politics. In examining the lived experiences of these women, and adding their voices to this research, the aim is to identify personal and philosophical factors that help explain choices on the effectiveness of the two platforms - public and political.

Keywords: Women, Empowerment, Social Change, Politics, Advocacy

Research method: Qualitative

# **The Higher Self Survey: Self-conceptions, Religious Belief and Individual Agency in the Australian New Age Community**

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*Oral Presentation*

The Higher Self Survey is an investigation into religious beliefs and practices in the Australian New Age community, with a particular focus on self-conceptions and individual agency. The New Age community is best described as a loosely affiliated social network with a common lingua franca and an interest in various spiritual disciplines such as yoga, holistic therapies, psychic phenomena such as spiritual channelling, occult practices such as tarot and divination, and humanistic approaches to self-actualisation. At a time when established religions are dwindling in popularity, and Australian society is becoming increasingly secularised, the desires for religious experience and religious community are proven to be remarkably resilient by the growing interest in New Age activities and ideologies. The Higher Self Survey aims to give a voice to this resilience by offering participants the opportunity to contribute to the current understanding of the Australian religious landscape. The Higher Self Survey addresses three research questions. Firstly, the survey will collect data to create a portrait of the Australian New Age community and, secondly, the survey will ask specific questions to test an original typology of self-conceptions presented in the Honours thesis *The Spiritual Human in New Age Religion: A Typology of the Higher Self*. This central thrust of the research aims to clarify how Australian adherents experience and articulate the New Age notion of the sacralised self. Thirdly, the survey investigates how participants experience and use spiritual guidance in their daily lives, thereby establishing a foundation for future research into ethics, individual agency and personal decision making in contemporary Australian society. This presentation will provide an overview of the Higher Self Survey including its aims, scope and methodology. In addition, a snapshot of preliminary findings from the survey will be presented along with their implications to research.

Keywords: New Age, Religion, Identity, Ethics, Australia

Research method: Mixed Methods

## **Mindfulness and its Related Qualities**

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*Oral Presentation*

The current study investigated the construct of mindfulness that is believed to have originated in Buddhism and introduced to modern psychology in the 1980s through Kabat-Zinn's Mindfulness Based Stress Reduction treatment program. The Westernised mindfulness practices, however, do not always emphasise the development of wholesome qualities to the same degree as the Buddhist tradition nor do they lay emphasis on the cultivation of mindfulness through practice. The current Western understanding and practice of mindfulness have, therefore, become substantially removed from their Buddhist origins. The current questionnaire-based study aimed to investigate the difference in the levels of trait mindfulness between those who cultivate mindfulness through practice and those who do not. It was hypothesised that the levels of the two components of trait mindfulness, attention and acceptance, and other qualities that are traditionally associated with mindfulness such as loving-kindness, compassion, joy, equanimity and empathy would be higher for those who practice mindfulness meditation compared to those who do not. The participants in the study ( $N = 368$ , 45.9% male, 51.9% female, 2.7% other, age range = 18 to 81,  $M$  age = 36.81 and  $SD = 14.25$ ) were recruited through Qualtrics and postings on various social media platforms and personal contacts. Preliminary results of the study supported one hypothesis fully and two others partially, including finding that the meditators had higher levels of trait mindfulness components, attention and acceptance as well as other qualities such as joy and empathy. Studies have shown that there is a significant positive relationship between mindfulness and resilience and together they explain 51% of the variation in psychological well-being (Pidgeon & Keye, 2014). Although the current study does not directly investigate this relationship, the findings might help future researchers investigate this association more directly.

Keywords: Mindfulness, Meditation, Empathy, Joy, Life-Satisfaction.

Research method: Quantitative

## **Session Ten – Environment and Environmental Economics**



## **The Impact of Economic Growth on Environmental Degradation: Evidence from 115 Countries**

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*Oral Presentation*

We examine the causal relationship between economic growth and environmental degradation for 115 countries over the period 1980-2016 within a multivariate framework. To capture the nuances in the attitude towards the growth-environment nexus, we divide these countries into four distinct income groups. Based on the Environmental Kuznets Curve (EKC) hypothesis, we use recently developed panel data estimators that accommodate cross-sectional dependence and the heterogeneity of parameter. Our empirical results show that the CO<sub>2</sub>, CH<sub>4</sub> and PM<sub>2.5</sub> emissions and their determinants are cointegrated based on Pedroni and Westerlund panel cointegration test. We found mixed support of the EKC hypothesis results using dynamic ordinary least square (DOLS) and Granger causality test. In respect to CO<sub>2</sub> emissions, DOLS results show that low-income and lower-middle income countries do not support the existence of the EKC hypothesis, but the results are supportive for upper-middle and high-income countries. In PM<sub>2.5</sub> emissions, DOLS support the EKC hypothesis but for upper-middle and high-income countries, it does not support the EKC hypothesis. Similarly, the high-income groups not supported by the existence of EKC hypothesis in CH<sub>4</sub> emissions. Subsequently, VECM based Granger causality test revealed that for lower-middle and upper-middle income countries, energy consumption and GDP growth increase the level of pollution because of their positive causal effect on CO<sub>2</sub> emissions. At the same time, GDP<sup>2</sup> in upper-middle and high-income countries have the negative relationship with CO<sub>2</sub> emissions which support the EKC hypothesis. Moreover, impulse response and variance decomposition test allowed to forecast the impact of explanatory variables on CO<sub>2</sub>, methane and particulate matter emissions. This paper makes a significant contribution to deliver a new light emphasizing on income level of a country and policy implication by the government related to significant indicators of environmental pollution.

Keywords: EKC, Panel, CO<sub>2</sub>, CH<sub>4</sub>, PMs.

Research method: Quantitative, Mixed Methods

## **What is the Solution to our Ecological Crisis?**

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School of Humanities, Arts & Social Science

*Oral Presentation*

Our world is at a crossroads in which the powerful grapple for control over populations and land. They seem to be identifying with polarised, outmoded ideas that have led to such immense suffering for humans and for Nature, that we sometimes feel it cannot be overcome. Might we somehow be able to transmute the negative outcomes we foresee from this behaviour? This outer confusion may be chaotic, but it has a shallow foundation, and we do not have to identify with it. There is a way forward out of this mess. We humans have a deep centre that is wise - if we contemplate that which is Good, True, and Beautiful, we can see that the eco-catastrophe we face is caused by human-serving, shallow thinking. It pulls us out of our inner centre if we identify with it. If we instead learn to contemplate that which is Beautiful in Nature, we can find the good heart within ourselves, and the wisdom of truth and beauty. In a deep appreciation of our world, and our place in it, as participants in its extensive Life systems, we can find our centre again. Earth is an Ecosphere and we are one of many species that participate in this ecosphere, through Earth's ability to maintain life – why do we not cherish this life, and the systems that support it? Can we take steps to thwart the current anthropocene extinction event? If it has been energised by careless attitudes, can we move toward a future in which humans no longer identify with such ideas? Can we learn to let Nature's harmony re-contextualise our orientation so we move into a fresh perception of ourselves as alive, as part of the beautiful life of our planet?

Keywords: Deep Aesthetics, Contemplation, Nature, Ecosphere

Research method: Mixed Methods

# **Ecosystem Response to Physical Fragmentation in Dryland Rivers: Evidence Synthesis**

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*Oral Presentation*

Physical fragmentation of river networks via dams and other water control structures alters the natural flow regime. This alteration often results in a change or loss of ecological function, impacting many freshwater aquatic species, particularly riverine habitat specialists. Many rivers in Australia and elsewhere have been the subject of significant hydrological and physical change over the last 100 years. An abundance of research has been conducted to assess the effect of physical fragmentation in river networks on the fish community. A systematic literature review was undertaken to identify existing published literature about the effect of fragmentation on fishes while minimising selection bias. Qualitative information from the existing literature was synthesised and mapped, showing that there is a scarcity of interdisciplinary research focused on long term functional changes in fragmented rivers, especially those located in arid climates. The existing literature was further analysed to elucidate how fragmentation in dryland rivers has influenced two measures of ecosystem function. The Eco Evidence method was used to extract evidence from the existing literature, allowing for the inclusion of multiple study designs. Initial results indicate that there is insufficient evidence to assess the relationships between physical fragmentation and food web dynamics and gene flow in dryland rivers.

Keywords: Evidence Synthesis; Dryland Rivers; Fragmentation

Research method: Quantitative, Mixed Methods

# **The Effects of Flood Frequency and Duration on Zooplankton Emergence from Floodplain Sediment**

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*Oral Presentation*

Zooplanktons are an important component of floodplain ecosystems as they provide a trophic link between primary producers and higher trophic level consumers such as macroinvertebrates, fish and birds. Thus, understanding the principal environmental factors that control the abundance and composition of the zooplankton assemblages that hatch from sediment egg banks, including the various environmental cues that stimulate hatching, is important to understanding how these ecosystems function more generally. The aim of this Ph.D. research project is to examine these controls on zooplankton hatching and emergence of desiccation-resistant eggs following wetting. In particular, the importance of past flood frequency and duration, depth and duration of the current flood and temperature. Surface soil was collected at deep and shallow locations within anabranches of the Macintyre River subject to a range of flooding frequencies. Four subsamples of each soil sample were placed in mesocosms which were flooded in the laboratory and subjected to treatments with respect to temperature (warm vs cool) and flooded depth (depth vs shallow). Mesocosms were sampled twice in a week for 6 weeks to measure temporal patterns in emergence. Zooplankton identification and enumeration is ongoing and preliminary results will be presented. It is anticipated that the final results will inform on the roles of past flood history, flood duration, water depth, and water temperature as controllers of hatching zooplankton communities and thus the possible impacts of flow regulation, extraction, environmental water, and future climate change.

Keywords: Zooplankton Emergence, Flood Frequency, Floodplain Sediment

Research method: Mixed Methods

## **Enabling Orangutan Resilience: Exploring Palm Oil-Related Pro-Environmental Behaviour**

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School of Psychology & Behavioural Sciences

*Oral Presentation*

The orangutan, among several other species native to Southeast Asia, are critically endangered and facing extinction. The resilience of these species is heavily threatened by the expansion of the palm oil industry, into tropical forests that support valuable ecosystems. A qualitative study was designed to explore the range of pro-environmental behaviour that the general public in Australia can engage in, that would help reduce palm oil-related deforestation and biodiversity loss. Twelve participants (conservation scientists, environmental journalists and activists) whose experience in the field ranged from 4 to 35 years, were interviewed. Interviews were audio-recorded, transcribed verbatim and subjected to a basic thematic analysis. The results indicated that palm oil-related pro-environmental behaviour can be classified into four categories: as citizens, as activists, as consumers, and as investors and philanthropists. As citizens, people can keep themselves informed about the issue and contact politicians about labelling laws and Australia's policies regarding palm oil imports. As activists, individuals can volunteer with non-governmental organizations (NGOs) working in this area and put pressure on companies to switch to sustainably sourced palm oil. As consumers, people can use their purchasing power to incentivize companies that use sustainable palm oil, and de-incentivizing companies that do not, while requesting retailers to make sustainable products more available. Finally, as investors and philanthropists, individuals can ensure investments in market shares do not support companies that continue to source non-sustainable palm oil, as well as make donations to NGOs. The next step in this research will be to understand which of these behaviours would have the highest ecological impact (in terms of reducing deforestation and preserving orangutan numbers), the greatest likelihood of being adopted and the lowest existing behavioural penetration in the general population. Further research will aim to develop and evaluate a behaviour-change intervention.

Keywords: Palm Oil, Pro-Environmental Behaviour, Orangutan, Deforestation

Research methods: Qualitative



## **Session Eleven – Animal Production**



# **Genetic Parameters for Milk Yield Persistency in First Lactation Jersey and Jersey-Friesian Cows in Sri Lanka**

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*Oral Presentation*

Milk yield persistency is the ability of cows to maintain milk production after peak yield. In the tropics, selection of cows for higher peak milk production may be disadvantageous due to challenging environmental conditions including high heat stress. Therefore, selection for milk yield persistency may be a better alternative to increase the total milk production during lactation in tropical environments. The aim of this study was to estimate genetic parameters for milk yield persistency under an intensive management system of first-lactation Jersey and Jersey-Friesian cows in Sri Lanka. Daily milk production records (663,890) from five to 350 days in milk of 991 Jersey and 1,381 Jersey-Friesian cows were used. The total number of animals in the pedigree was 3,766. Variance components for daily milk yield were estimated with the WOMBAT software fitting a univariate random regression model with second-order Legendre polynomial assuming heterogeneous residual variances. The fixed effects used in the model were breed and year-season (the dry season is from December to April and the wet season is from May to November). Variances of the difference between milk yield at days 90 and 270 were calculated from estimated variance components at days 90 and 270 to obtain the heritability for milk yield persistency. The cows showed variation in milk yield in late lactation and milk yield persistency was heritable. The heritability estimate for milk yield persistency was 0.07 for Jersey and Jersey-Friesian cows. Therefore, milk yield persistency is somewhat heritable and the trait could be used in genetic evaluations in Sri Lanka to select cows that are more productive in late lactation.

Keywords: Dairy Cattle, Milk Yield Persistency

Research method: Quantitative

# **Analysis of Culling Reasons and Age at Culling in Australian Dairy Cattle**

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*Oral Presentation*

Culling reasons in Australian dairy cattle were examined based on culling records from 1995 through 2016. A total of 2,452,124 individual cow culling observations were obtained from Datagene, Australia, of which 2,140,337 were Holstein and 311,787 were Jersey cows. A binary logistic regression model was used to estimate effects of breed and age and the trend of a particular culling reason over years. The most important culling reasons identified were infertility (17.0%), mastitis (12.9%), low production (9.3%), sold for dairy purpose (6.4%) and old age (6.2%) while 37.4% were “other reasons not reported”. Average age at culling differed significantly between Holstein (6.6 years) and Jersey (6.2 years) cows. The estimated age at culling declined for both breeds on average by 0.27 years between 1988 and 2002. The chance of culling cows with infertility and low production was high in early ages and consistently declined as age advanced, while culling due to mastitis was higher in later age of cows. The trend of main culling reasons over time was evaluated, indicating that the probability of culling due to infertility has progressively increased over the years, while culling for mastitis has generally reduced trend over time. Culling of cows due to low production sharply decreased over time for both breeds. We concluded that culling age has decreased in both breeds whereas culling reasons have changed over the last two decades, with low production becoming a less important reason for culling and infertility becoming more important for both breeds.

Keywords: Culling Reasons, Trend, Age at Culling

Research method: Mixed Methods

## **Preliminary Analysis of Primal-Cut Weights in Pigs**

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*Oral Presentation*

Improving carcass yield is a crucial factor in increasing profitability and return per carcass may be increased by enhancing the relative weight in the most valuable primal cuts. The main objective of this study was to characterize primal cut weights (PCW) and to evaluate the associations between different PCW with hot carcass weight (HCW) and carcass fat depth (CFD). Data were collected from 2011 to 2013 which included PCW recorded on 2,153 carcasses from one herd and three different breeds. The four primal cuts were shoulder weight (SWT), leg weight (LWT), belly weight (BWT) and loin weight (LNWT), also analysed as a percentage of HCW (SWTP, LWTP, BWTP, and LNWT). The mean (SD) HSCW and CFD were 79.1 (8.26) and 10.8 (2.59). The mean percentages of different primal cuts were 32.8 (1.72) for SWTP, 33.6 (1.53) for LWTP, 14.7 (1.67) for BWTP and 18.6 (2.4) for LNWT. The coefficients of variation (CVs) of the PCW varied from 10.3% for LWT to 17.8% for LNWT and for primal cut percentages CVs ranged from 4.5% for LWT to 13.1% for LNWT. Positive Pearson correlations were found between PCW and HCW ranging from 0.88 for LWT to 0.61 for LNWT. There were also significant associations among different PCW which ranged from 0.35 between BWT and LNWT to 0.80 between LWT and SWT. The pattern of Pearson correlation was the same between primal cut percentages, although the magnitude of correlations was lower ranging from -0.42 to 0.00. Pearson correlations between CFD and primal cut percentages were lowest for LWTP (-0.28) and highest for BWTP (0.28), explaining significantly higher intermuscular fat content in belly and higher LWT in lean pig breeds. Further analyses will estimate genetic correlations among these carcass traits and these Pearson correlations are the first indication of these associations.

Keywords: Carcass Weight, Phenotypic Correlation, Fat Depth

Research method: Quantitative

## **Beef Safety and Quality in Traditional Cattle Abattoir: Theoretical Review and Need for Assessment**

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*Oral Presentation*

Improved cattle production system in Nusa Tenggara Barat, aligned with growing demand for premium beef, is an enormous opportunity for smallholder beef enterprises to improve their economy and livelihood. However, the situation is challenging for smallholder beef enterprises to produce fresh beef which is safe and of acceptable quality to meet market characteristics. Most small-sized beef production is carried out in traditional abattoirs where the process is manually operated with limited control and inspection, and insufficient safety and hygiene programmes, leading to high risk of contamination to beef-end products. Issues arise from unhygienic facilities and equipment, non-existent safety control assessment, improper infrastructure, along with a lack of workers knowledge and low regulatory enforcement, which would trigger harmful contaminations, such as animal diseases and foodborne pathogens, and veterinary residues, any of which may contribute to contamination of beef end-product. In view of the foregoing, upgrading beef production and the control strategies for hygiene and quality management are the crucial aspects, and abattoirs are the most critical sectors for regulating safety and quality assurance. We develop a pilot study to assess beef production characteristics and organizational management and personnel, as well as hygiene and sanitation condition in order to develop appropriate approaches of safety control and management, particularly for traditional cattle abattoirs.

Keywords: Traditional Abattoir, Food-Borne Pathogen

Research method: Qualitative

# **Abstracts by Streams and Sessions**

## **STREAM FOUR**

- Session Twelve - A Different View
- Session Thirteen - Education through Experience and in Context
- Session Fourteen - Agriculture Collective Two  
Moving and stopping in Sport



## **Session Twelve – A Different View**



# **Confirmatory Factor Analysis Results of MES-JS Employing Low Socio-Economic Early Adolescents' Motivation and Engagement Levels in Learning in Sri Lanka**

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*Oral Presentation*

A significant proportion of early adolescents' participation and achievement in education is low in low socio-economic districts in Sri Lanka and it appears that, their motivation and engagement in learning impacting this situation. Therefore, Motivation and Engagement Scale-Junior School (MES-JS) was employed to identify their levels of motivation and engagement in learning. This study surveyed 200 eighth-grade early adolescents from Sinhala and Tamil-medium schools located in Monaragala and Nuwara Eliya districts. The MES-JS has 11 second order factors (self-belief, valuing, learning focus, planning, task management, persistence, anxiety, failure avoidance, uncertain control, self-sabotage, and disengagement) and four first order factors (positive motivation (PM), positive engagement (PE), negative motivation (NM), and negative engagement (NE)). Therefore, confirmatory factor analysis techniques were conducted for the model based on those lower and higher order factors by SPSS-Amos 24. The PM factor model showed a poor model fit, as indicated by the goodness-of-fit index values:  $\chi^2 / df = 4.14$ , CFI = .79, TLI = .73, RMSEA = .120, and SRMR = .001. The PE factor model showed a poor model fit:  $\chi^2 / df = 1.82$ , CFI = .89, TLI = .86, RMSEA = .061, and SRMR = .164. The NM factor model showed poor model fit:  $\chi^2 / df = 2.83$ , CFI = .81, TLI = .76, RMSEA = .092, and SRMR = .001. The NE factor showed a poor model fit:  $\chi^2 / df = 1.47$ , CFI = .96, TLI = .95, RMSEA = .047, and SRMR = .524. The goodness-of-fit index values for all factors in MES-JS did not show a good fit with the current study sample and a considerable number of the regression weights for individual items were lower than the expected level for all the factors. Therefore, it was considered that, MES-JS original data structure was not appropriate for use in this study. It was decided to conduct an exploratory factor analysis for the current sample to get a robust factor solution.

**Keywords:** Early Adolescents, Motivation, Engagement, MES-JS, CFA

**Research method:** Quantitative

# **Thermal Response of Meat Ants Varies Against Different Ramping Rates**

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*Oral Presentation*

Insect response to thermal stress is widely studied across different taxa. Critical temperature maximum (CT<sub>max</sub>) and metabolic rate (as the rate of CO<sub>2</sub> release) are used to measure thermal tolerance response. To minimize physiological cost insects show limited phenotypic plasticity in their CT<sub>max</sub> and is said to be evolutionary hard wired. But it is being always a question which ramping rate is the most suitable to be used in assessing insect response to thermal stress. In this study we wanted to check whether CT<sub>max</sub> and metabolic rate would change depending on different ramping rates used. Meat ants were collected from seven different nests in Armidale and four ants from each nest were chosen randomly. Collectively 28 ants were used in separate respirometry assays for each ramping rate, 0.25°C/minute, 0.5°C/minute and 1°C/minute. Standard technique was used to carry out all respirometry assays. CT<sub>max</sub> and metabolic rate were calculated in Expedata. CT<sub>max</sub> and metabolic rate increased with increasing ramping rate. CT<sub>max</sub> and metabolic rate were significantly different against the three ramping rates. These results suggest that for proper interpretation of insect response to thermal stress an appropriate ramping rate must be used and we recommend 0.25°C/minute rate as the most reliable ramping rate which provides enough time to produce meat ant thermal response in a more sensible and physiologically meaningful manner.

Keywords: Meat Ant, Respirometry, Ramping Rate, Thermal Response

Research method: Mixed Methods

**Innovating a Legal Framework Evaluation for Sustainable Forest  
Conservation in Peninsular Malaysia: A Case Study in the East Coast  
States of Peninsular Malaysia**

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*Oral Presentation*

The forest of Malaysia is amongst the oldest in the world and richest in terms biodiversity. The challenge of forest conservation is ever increasing because the forest areas are currently experiencing an increasing degree of deforestation and biodiversity loss due to exploitation in the name of development. It is noted that the forest is itself a natural resource and it is common for a country/state to use that natural resource for the purpose of development provided that it adheres to the principle of sustainable development. The hypothesis is that the problems can be mitigated and sustainable development can be promoted through effective regulation that will enable a holistic management of the forests. This paper suggests that in order to propose such change, there is a need for the current legal framework to be assessed on its comprehensives and effectiveness. It is submitted that the assessment or evaluation should be objective in nature that is by comparing the currently existing legal principles and rules with the state of implementation. It is the intention of this research to develop or innovate this legal framework evaluation. The matrix of the evaluation is to be constructed by looking into legal principles and detailed legal rules relevant to forestry regulations in Malaysia. The assessment framework should cover principles and rules from international instruments, national legislation, judicial decisions and policy statements. The evaluation shall be made at four levels which are, instrumental, institutional, behavioural and outcome. Once prepared, this innovation shall be tested at the East Coast States of Peninsular Malaysia which are selected due to their vast forest areas. It is intended that this research will produce a workable objective legal framework evaluation that will enable stakeholders or interested parties to assess the adequacy and to encourage legal improvement of the forestry laws in Malaysia.

Keywords: Forestry Law, Sustainable Development, Legal Innovation

Research method: Qualitative



**Session Thirteen – Education through  
Experience and in Context**



**The Role of Early Childhood Centre Directors in Facilitating and  
Promoting University Teaching and Research in On-Campus  
Early Childhood Centres**

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*Oral Presentation*

My study seeks to respond to the question: what is the role of on-campus early childhood centre directors in facilitating and promoting university teaching and research? Investigating the role of the centre director, their philosophy and leadership; the position of the centre within the university's organisational structure; and, the financial and management assistance the centre receives from the university will be addressed. In this presentation I will focus on the intersections between this study and the tertiary education context and also share a literature review which has had implications for the framing of this study. Firstly, in the tertiary education context on-campus Early Childhood Centres (ECCs) are commonplace in Australian universities. However, their positioning within each university varies considerably with regard to the support centres can offer for university teaching and research. The level of support depends on many factors, such as the position of the centre within the university's organisational structure, the designated role of the centre's director and the financial and management assistance received from the university. Secondly, an initial literature review has identified that studies into how on-campus ECCs support university teaching and research are significantly lacking, including centre policies and practices. Little research has been undertaken in Australia, and this establishes the need for more research on this topic. The literature reviewed has informed a social constructivist theoretical framework and interpretivist paradigm to guide the research and implementation of a case study methodology. To investigate the engagement of two on-campus ECCs supporting their universities' teaching and research, employing case studies of the centre directors. I will explore how they perceive support occurs and what barriers the directors may face in order to reach their full potential for supporting teaching and research. This study is currently underway with data collection occurring.

Keywords: On-Campus Early Childhood Centres

Research method: Qualitative

# **Why Children from Refugee Backgrounds are Not Accessing Early Childhood Education and Care (ECEC) in Queensland and what we can do about it?**

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*Oral Presentation*

The evidence is clear that access to high quality universal early childhood education and care (ECEC) programs, such as kindergarten/preschool provide a safe, stabilising influence for children from refugee backgrounds in resettlement, affording a powerful means of transcending vulnerability. High quality ECEC programs enhance a child's: resilience, cognitive, behavioural, social and linguistic skills; laying the foundations for successful transition to school, and future health, educational and employment outcomes. The problem is that children from refugee backgrounds are not equitably enrolled in ECEC services in Queensland, and early childhood practitioners (ECPs) are frequently ill prepared to work with children from culturally and linguistically diverse backgrounds who have experienced war-related trauma. In this qualitative study into the barriers and enablers to ECEC participation for families from refugee backgrounds in South East Queensland, data was sourced from 55 participants, consisting of parents, ECPs and managers, through seven organisations affiliated with the Pre-Kindergarten Grants Program, an initiative of the Queensland Department of Education and Training from 2013 to 2016. Findings reveal that most families from refugee backgrounds were excluded from ECEC services due to cost, linguistic discrimination, racial prejudice, or because they were seeking asylum. For families who enrolled, many withdrew children due to: lack of respect, racial tensions, negative perceptions about quality of care, fear of children being abused by educators, and fear of State intervention. Families who continued to participate, did so mainly because their ECPs fostered culturally safe and secure environments, promoting both child and family inclusion. These ECPs gained understanding of child development within a cross-cultural context, facilitated dual-language learning, and used trauma-informed practice. The magnitude of systemic neglect entails an overhaul of barriers preventing participation in ECEC services for families from refugee backgrounds, and investment in professional development to foster cross-cultural competencies and trauma-informed practice for all ECPs in Queensland.

Keywords: Refugees, Preschool Education, Barriers, Enablers, Policy

Research method: Qualitative

**Nineteenth-Century Poetic Peers, Hopkins, Rimbaud and Laforgue:  
A Cross-Channel Comparative Dialogue**

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*Oral Presentation*

Historically, poetry ebbs and flows between opening language to innovation and clinging to convention. In Victorian England, the English poetic idiom became jaded and constrained. Then Gerard Manley Hopkins (1844-1889), in his Jesuit isolation, heard a new rhythm. English poetry was thus reborn into a modern prosody. His inventiveness had been matched across the Channel, in post-Revolutionary France, where the impetus was earlier. In my research, I compare Hopkins' poetry with that of two of his French contemporaries, Arthur Rimbaud (1854-1891) and Jules Laforgue (1860-1887), exploring the ways all three poets disrupted poetic conventions. I aim to demonstrate how many aspects of the inventiveness of Hopkins' poetics were similar to that of Rimbaud and Laforgue, despite their different languages. In particular I examine their use of rhyme and rhythm, the tonal qualities of their poetry, how punctuation adds to the effect of this new poetry, and how their syntax, especially the inventive juxtaposition of words, marks their shared break with convention. To achieve this aim, I use a comparative method that not only brings out the similarities and differences between their poetry but enhances their mutual elucidation by reading the poetry of Rimbaud and Laforgue through the poetry of Hopkins, and vice versa. This study employs the method of close reading and "close listening", paying attention to how this poetry is heard as well as read. I conclude by suggesting that poetry is a resilient art form that evolves in conjunction with historical and social circumstances. In this paper I shall explore particular textual samples to illustrate the comparative method and the disruption of convention in the three chosen poets.

Keywords: Poetry, Comparison, Innovation, Hopkins, Rimbaud, Laforgue

Research methods: Qualitative

# **Influences on Early Childhood Educators' Outdoor Nature-based Practices with Children under Three Years of Age**

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*Oral Presentation*

The current early childhood curriculum framework informs early childhood educators that outdoor environments should help build children's connections with nature and encourage their awareness and appreciation of the natural world. Educators are also expected to examine their theoretical perspectives and pedagogical understandings when offering physical environments and experiences that both stimulate young children's nature connections and build strong foundations for environmental education. This guidance is to be applied to practices with all children, including those from birth to under three years of age. These policy expectations raised questions about educators' interpretations and experiences of nature, their images of very young children, and their ability to articulate their pedagogical practices, particularly as they related to children under three years of age in natural outdoor environments. In Phase 1 of this qualitative case study I focused on the outdoor nature-based practices of a small group of educators who worked with children from six weeks to two years of age in a Brisbane-based long day care centre. I applied a critical socio-constructivist lens in this study to explore educators socially and culturally constructed beliefs, perceptions, and assumptions that might have influenced their outdoor nature-based pedagogical approaches. Educators were invited to participate in a critical participatory action research (CPAR) project through which they examined the influences that their relationships with nature, perceptions of very young children, and interpretations of policy expectations might have on both the experiences they offered outdoors and their agency as professionals. This presentation shares initial findings from Phase 1 of the study, and Phase 2 is now continuing to explore the outcomes of the initial CPAR project with a leading outdoor educator.

Keywords: Early Childhood; Outdoor Nature-Based Pedagogical Practice

Research methods: Qualitative

## **Pedagogies for Sustainability in Bush Kinder**

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*Oral Presentation*

While there is a growing awareness of the need for children to spend more time in natural settings, the pedagogical link between Education for Sustainability (EfS) and nature play requires further investigation. The assumption that children's connection with nature equates with (EfS) is a key issue, as is educators' understandings of their own pedagogical roles in relation to a nature sustainability nexus. This doctoral study explored how the links between nature and sustainability are perceived by early childhood educators in bush kinder settings in Australia, and the implications for their pedagogy. An ongoing entangled and 'messy' journey is underway to seek interwoven meanings within the enmeshed data. Current suppositions suggest that the initial study findings of four themes relating to nature play and sustainability; the nexus between nature and sustainability, the participating educators perceived relationships with nature, awareness of Indigenous connections to the land and place responsive pedagogies, remain relevant as influencers of the pedagogy of the educators in the bush.

Keywords: Early Childhood, Sustainability, Nature Play

Research method: Qualitative



## **Session Fourteen – Agriculture Collective Two**



## **Quality or Quantity? What Consumers Prefer when Purchasing Tomatoes.**

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*Oral Presentation*

Tomato is the most extensively grown and the most consumed vegetable in Pakistan. The growth in global population and increased trends in Pakistan triggered ever-increasing demand for tomato production and consumption. As such, the enhanced demand created opportunities for growers to produce quality tomatoes year-round. Consequently, the availability of tomatoes showcased a marked shift in consumers' tastes and preferences towards purchase, use and consumption. Therefore, it is critical to understand consumer behaviour and consumer preferences towards differentiated tomato products in Pakistan that are relatively new. Considering that consumers in Pakistan tend to use tomatoes in a diversified manner on a day-to-day basis, and the dearth of studies focusing on exploring consumer preferences and tastes towards differentiated tomato consumption, the present research study aims to investigate consumers' preferences towards various quality and quantity attributes of tomatoes in Pakistan. This study examined the key attributes of tomatoes as perceived by consumers in mass and niche markets possibly influencing consumers' purchase, use and consumption stages of the decision-making process. Focus group discussions including tomato consumers of mass and niche markets indicated that tomato consumers of niche markets tend to buy quality tomatoes from supermarkets and are less concerned about price. Niche market consumers attributed greater preference to buy tomatoes from the supermarkets as the convenience of buying all of the groceries at one place in a clean and friendly environment outweighed the high prices set out on product offerings in supermarkets. In addition, the findings indicated the potential of branded and organic tomatoes in niche markets, which are not currently available. Similarly, the mass markets also seem to elicit certain potential to focus upon selling branded tomatoes within a lower price range in order to attract more consumers apart from offering incentives for enhancing suppliers and retailers to mass markets.

Keywords: Tomato Branding, Consumer Preferences, Focus Groups,

Research methods: Qualitative

# **Business Model for Innovative Smallholder Beef Systems in Indonesia: A Framework Proposal**

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*Oral Presentation*

The main purpose of this study is to identify Business Models in smallholder cattle production and marketing that represent innovation behaviour. Three primary components of business model have been identified: value proposition, value architecture, and financing mechanism. The focus of this study is to address commercial business management practice amongst smallholder beef producers of Nusa Tenggara Barat, Indonesia. This study entails listing and categorisation of business, production, marketing, and innovation practice alongside standard demographic and technical data for each smallholder. The present research will employ (1) descriptive statistics to provide initial benchmarking; (2) statistical procedures to assess relationships between innovation actions and the explanatory variables identified as research hypotheses; and (3) two-step cluster analysis to identify innovation groupings associated with Business Models. This study would benefit a benchmarking of practice for smallholders and a benchmarking of management and innovation practice for local services, particularly agricultural extension and animal health services. Economic impacts will accrue through a change in production and marketing management by facilitating the creation of a value proposition, a value architecture and a financing mechanism leading to productivity improvement and thus profitability increase.

Keywords: Business Model, Innovations, Smallholder Beef Producer

Research Method: Quantitative

## **Overcoming the Barriers to Adoption of Digital Agriculture**

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*Oral Presentation*

This research is focussed on creating self-mentoring groups from those who desire to address a common digital solution to assist agricultural management. It will provide them with a structured, yet flexible approach to change. Many barriers to the adoption of digital agriculture have been identified and farmers feel unsupported and are struggling with the transition from analogue to digital agriculture. They lack clarity about the value of, and approach to, introducing digital agricultural approaches to their business and are uncertain about the skills and knowledge required to implement this change. Despite on-going recognition of the barriers impeding the digital transition, steps to resolve or approach these issues from a farm business perspective are lacking. An important point of difference of this research is that it works with business owners/managers and their nominated operations manager/employee and a key third party service provider known as the business team. Working with this team the research will assess if applying a more formalised approach to change using accepted management theory and practice, supported by collaborative, farmer-driven group learning and online resources can assist farming businesses take a more holistic, rationalised and confident approach to the transition to digital agriculture. This research aims to provide a clear roadmap for farmers to select the most appropriate digital tools for their businesses and support them to streamline the transition from analogue to digital practices. Resources developed to support this process will be made available for on-going use by wider farming community through the SmartFarm Learning Hub website: <http://smartfarmhub.education>. Using a mixed method, participatory action research approach, this research aims to assess How can an adoption framework help improve the uptake and use of digital agriculture?

Keywords: Digital Agriculture Adoption Self-mentoring

Research methods: Mixed Methods



## **Session Fourteen – Moving and stopping in Sport**



# **A Novel Method of Quantifying Head Impacts in Mountain Biking**

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*Oral Presentation*

Background: Mountain biking refers to off-road cycling where participants cycle on uneven trails. It has become a popular activity with statistics indicating increases in Australian recreational and competitive riders between 2014 and 2017 of 124% and 13%, respectively. Research has indicated that head injuries (including concussion and other head injuries) account for between 8-20% of serious mountain bike related injuries. Excessive magnitude or frequency of accelerations to the head can cause extracerebral bleeding and brain tissue damage. Although monitoring of head impacts through the implementation of microtechnology has been well documented in field sports, no similar research has been conducted in mountain biking. As such, the mechanical characteristics of these impacts remains unknown. Purpose: Develop a novel helmet mounted sensor to measure and quantify the biomechanics of head impacts in mountain biking. Methods: The design of a prototype sensor to quantify the biomechanics of head impacts in mountain biking has three main phases; 1) reviewing previous literature in cycling and other sports in order to fully understand currently used methods and expected linear and angular acceleration profiles to be measured; 2) hardware, firmware, software and physical design of a sensor able to accurately and reliably measure linear and angular acceleration of the head without impacting on the athlete; 3) validation which involves assessing the validity and reliability of the microtechnology sensor using an industry standard laboratory (Roads and Maritime Services Crashlab) and field based reliability testing. Conclusions: Analysis of previous research and preliminary designs have indicated that the use of in-vivo monitoring through the implementation of microtechnology can overcome current limitations by providing detailed information on the mechanical characteristics of head impacts in cycling.

Keywords: Head Impacts; Engineering Design; Sensors;

Research method: Mixed Methods

# The Movement Demands of Elite Female Rugby League Match-play by Positional Groups

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*Oral Presentation*

Introduction: The women's National Rugby League (WNRL) is a professional competition contested by four clubs. The WNRL is structured as a round-robin format with the two top teams competing in the final. Whilst the WNRL consists of similar rules to the men's competition there are a few changes such as 10 interchanges per match and a reduced game duration of 30-minute halves. Objective: The aim of this study was to compare the movement demands of elite female rugby league match-play by positional groups. Method: Global Positioning System data was collected on 22 players from the same rugby league club during the inaugural season of the WNRL competition. Players were categorised into one of the following four positional groups; adjustables, outside backs, hit-up forwards and wide-running forwards. Absolute and relative movement demands were measured using the following variables: duration (min), total distance (m), relative distance ( $\text{m}\cdot\text{min}^{-1}$ ), high speed distance ( $[\text{m}] > 20 \text{ km}\cdot\text{h}^{-1}$ ), very-high speed distance ( $[\text{m}] > 25 \text{ km}\cdot\text{h}^{-1}$ ) and acceleration and deceleration efforts (count). Results: Overall the results showed minimal differences between positional groups. Adjustables were shown to spend more time on the field ( $67.05\pm 1.44$  vs  $38.13\pm 12.45$ min;  $p=0.007$ ) and cover a greater distance ( $5769.40\pm 458.4$ m vs  $3133.58\pm 972.18$ m;  $p=0.006$ ) than hit-up forwards. The hit-up forwards showed less absolute ( $179.34\pm 109.57$  m vs  $544.94\pm 290.39$  m;  $p=0.015$ ) and relative ( $4.73\pm 2.89$   $\text{m}\cdot\text{min}^{-1}$  vs  $14.37\pm 7.66$   $\text{m}\cdot\text{min}^{-1}$ ;  $p=0.015$ ) high speed distance when compared to adjustables. Conclusion: The data collected showed minimal differences amongst player positional groups indicating that positional roles may not have been established in contrast to those observed in the men's competition. This information can assist in developing specific training strategies to further the current development and abilities of female players. Training strategies could also be used to help establish and develop player positions and progress the game further.

Keywords: Women, Rugby League, Elite

Research methods: Qualitative

## **POSTER PRESENTATIONS**



## **Cryptocurrency Acceptance and Business Innovation**

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*Poster Presentation*

In today's world technology is constantly changing and take a turn for the better which that help organizations and governments to facilitate their processes. The blockchain technology is one of the recent developments which is preparing to release a technological revolution in the internet space. Blockchain technology is referring as the technology for storing, verifying the digital transactions through the Internet with the highest degree of security and encryption. Blockchain technology will drive in many areas of business for economies, marketplaces, and governance. That means the blockchain can be work as infrastructure for any databases, as an example cryptocurrency. Cryptocurrency is known as a virtual currency that are traded via the internet, perhaps the most famous is Bitcoin. Cryptocurrency is gained more increasing interest as a new type of technology that is potentially leader and destroyer for the payments industry on a global scale. Blockchain technology and cryptocurrency are considered a game changer for the future economies of many countries around the world. However, there are many different usage scenarios of the cryptocurrency and its future is unclear. The commonly used approaches include the Innovation Diffusion theory by Rogers and the Technology Acceptance Model by Davis. By combining theory of the innovation diffusion (IDT) and the technology acceptance model (TAM), this study proposes a conceptual framework for cryptocurrency acceptance and continued usage of digital finance which approval as potential business innovations.

Keywords: Blockchain Cryptocurrency

Research method: Mixed Methods

**Visceral Organs Development and Meat Yield of Broiler Chickens on Mash or Pelleted Diets With or Without Microbial Enzyme of Replica Tanzanian Diets**

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*Poster Presentation*

A study was carried out to evaluate the effect of feed form and microbial enzyme supplementation on visceral organ development and meat yield of broiler chickens. A total of 480 day-old unsexed Ross 308 broilers chickens were used in a 2 diets (pellet or mash) × 4 enzymes (none, Aextra XB, Quantum blue and Aextra XB+Quantum blue) factorial study. The birds were allocated in 48 wire cages (10 birds per cage) in a climate-controlled rooms at the Centre for Animal Research and Teaching, UNE, Australia. Birds were raised for 35 days in three phases; starter (0-10) days, grower (11-24) days and finisher (25-35) days. Water and feed were supplied ad libitum. There was no interaction between feed form and microbial enzyme supplementation on the relative weight of viscera organs. The relative weight of gizzard plus proventriculus, pancreas and small intestine was higher ( $P < 0.001$ ) in birds fed mash diets. Addition of enzyme had no effect ( $P > 0.05$ ) on the weights of all measured viscera organs. The dressing percentage and relative weights of breast, thighs and drumsticks were increased ( $P < 0.001$ ) in birds fed pelleted diets and when microbial enzymes were supplemented, with best dressing percentage and heavier breasts and thighs observed when Aextra XB was added to the diets. However, enzyme supplementation had no effect ( $P > 0.05$ ) on the relative weight of drumsticks. There was interaction effect between feed form and enzyme on the weight of drumsticks. It can be concluded that birds raised on pelleted diets had well developed viscera organs and more meat yield, with even better result when microbial enzymes were supplemented.

Keywords: Broilers, Viscera Organs, Meat Yield, Pellets, Enzymes

Research method: Quantitative

## **The prevalence of Local Chicken Phenotypes and Their Characteristics**

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*Poster Presentation*

The following phenotypes were identified in the study area: normal type (fully feathered chickens, normally black, sometimes with multi-coloured feathers), spotted, greyish, naked neck, frizzled, crested-head and dwarf. Forty-seven percent of the farmers indicated that they owned different phenotypes of village chickens while 53 % indicated that they owned only one phenotype. Out of the farmers who kept more phenotypes, 63, 27 and 11 %, owned two, three, and more than three phenotypes of the local chickens, respectively. Of all the phenotypes kept, the normal type was the most predominant type (67.5%), followed by the spotted chickens (17%) and then the greyish type (8%). Naked neck, crested-head, frizzled and the dwarf types were the least predominant. The different phenotypes have different characteristics and these (characteristics) influence preference for and prevalence of a particular phenotype. These characteristics include large size, high egg production, high hatchability and early weaning.

Keywords: Characteristics, Local Chicken, Phenotypes, Prevalence

Research method: Qualitative

## **Longevity of blady grass (*Imperata cylindrica*) seeds**

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*Poster Presentation*

Blady grass (*Imperata cylindrica* (L.) P.Beauv.) is considered one of the 10 worst weeds globally. It has the ability to reproduce by seeds and by rhizomes, making management more difficult than if reproduction was through one method alone. Once established, it is a strong competitor for resources such as nutrients, water and light. The objective of this research was to determine the longevity of blady grass seeds in order to improve weed management. Seeds were purchased from a commercial seed supplier in May 2017, having been collected from an area near Coonabarabran in Western New South Wales (NSW) in 2015 and subsequently stored by the seed company at 10°C and 50% relative humidity. After purchase, seeds were stored at room temperature (~12–22°C) at the University of New England in Armidale, NSW. Germination testing on 16 June 2017 indicated a germination percentage of 89%. Seeds were then subsequently germinated under the same conditions on 7 November 2017 and the germination percentage had declined to 37%. This rapid decrease in germination rate during the nearly five months of storage at room temperature indicates that blady grass seed may be very short lived under field conditions in temperate areas of Australia as has been found elsewhere in the world and that sexual reproduction may play a less significant role in dispersal and establishment than plant rhizomes.

Keywords: Rhizomes, Germination, Weed

Research method: Mixed Methods

# **The Future Picture of the Saudi Accounting Education Teaching Methods and Curriculum**

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*Poster Presentation*

From the literature review there are shortfalls of literature concerning accounting education in the developing countries such as Saudi Arabia. Also, the ongoing and rapid changes in accounting education globally leads to increase the need of qualified and skilled accountants. This paper aims to improve the Saudi accounting education model to develop a system that reflects international best practice as well as local expectations and give a chance for the accountants to play a vital role in the economic development. And also, to provide an assessment of the current system that meets the needs of all key stakeholders. Moreover, to develop evidence-based recommendations for a new accounting model in Saudi Arabia. The research objectives are: to investigate and assess the current system then evaluate it, identify cultural, political, ideological factors that influence the system, to make suggestions to change from the current to modified system and finally to evaluate/benchmark the suggested modifications to the system based on the Saudi stakeholders and congruence with western systems.

Keywords: Accounting, Education, Saudi, Teaching Methods, Curriculum

Research method: Mixed Methods

## **Breeding for Longevity in Australian Sheep**

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Agricultural Breeding and Genetics Units

*Poster Presentation*

The sheep population of Australia has declined between 2006 and 2015 by 22% to a population of 70.9 million in 2015. To exploit the benefit of increased demand for lamb, the industry has emphasized research on young animal performance and carcass attributes potentially at the cost of longevity and life time performance in the maternal flock. In Australian Merino sheep flocks, the reproductive performance usually starts at 1.5 years of age and finishes between 4.5 and 6.5 years. Longevity can be defined as the period from when the ewe has her first lamb to when she leaves the flock due to death or culling decisions. Improved longevity is likely to provide financial benefit to the commercial farmers through improved production in older ewes and by allowing a greater number of ewes to be joined to terminal sires. Previously, research on longevity in sheep is scant and has yet to be able to quantify the relationship between ewe longevity and the reproduction and wool production in older ewes. The analysis will make use of data submitted by Australian sheep breeders to the national genetic evaluations MERINOSELECT and LAMBPLAN. The study aims to define a measure of longevity for the Australian sheep industry and explore the relationship between ewe longevity and lifetime wool and lamb production.

Keywords: Longevity, Merino Select, Lamb Plan

Research method: Quantitative

**Breaking Strength and Mineral Contents on Tibia Bone of Broiler  
Chickens Fed Maize-Based Diets Supplemented with  
Phytase and Carbohydrases**

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*Poster Presentation*

The objective of this study was to assess the breaking strength and mineral contents on tibia bone of broiler chickens on diets containing maize and supplemented with different enzymes. A total of 648 male and female Ross 308 broiler chickens were randomly assigned. A  $3 \times 2 \times 2$  assigned [Three doses of phytase none, standard (100 mg/kg) and superdose (300 mg/kg)]  $\times$  two doses of xylanase [none and standard (100 mg/kg)]  $\times$  two doses of  $\beta$ -glucanase [none and standard (100 mg/kg)] factorial arrangement of treatments. Each of the 12 treatments was replicated 6 times, with 9 birds per replicate. The diets were fed ad libitum from 0 to 35 days. At 35 days, the right tibia bone was taken from two birds (two bones per replicate) and used to measure breaking strength and ashed and mineral contents of the bones were determined. A general linear model procedure was used to analyse the collected data Minitab Inc. (2013). The Animal Ethics Committee of the University of New England (UNE) Australia approved the experiment (approval number AEC16-089). Results showed no interactions between enzymes and there was increased in breaking strength but was no significant. Dry matter was decreased ( $P < 0.01$ ) in supplemented of xylanase. In conclusions, broiler chickens fed maize-based diets supplemented with different doses of phytase and carbohydrase did not affect the breaking strength and mineral contents on tibia bone.

Keywords: Phytase,  $\beta$ -glucanase, Xylanase, Maize, Broiler Chickens.

Research method: Mixed Methods

# **Agency Costs, Ownership Structure and Dividend Policy in Saudi Listed Firms: A Simultaneous Equations Approach**

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UNE Business School

*Poster Presentation*

The most commonly conceived conflict of interest scenario in developing countries such as Saudi Arabia is a conflict between the majority and minority shareholders. The main reason attributes to the nature of the Saudi business environment. That is, business activities have been mainly owned by a few rich families where the rights of minority shareholders are not well protected. This conflict between majority and minority shareholders is expected to be more severe in emerging economies where controlling shareholders are likely to manipulate profits at the expense of minority shareholders. However, the implementation of good corporate governance mechanisms is essential to protect the interests and rights of all stakeholders. The aim of this study is to examine the simultaneous association between agency costs, dividend policy and ownership structure in Saudi listed firms. These relationships have never been researched in the literature by using simultaneous equations approach. As a pioneer of this type of study, the results of this study will provide new evidence for the reciprocal interactions between these variables. The study uses secondary data obtained from annual reports of all non-financial listed firms in the Saudi Stock Exchange over a five-year period from 2010 to 2015. The reason for using this period is the compulsory enforcement of the corporate governance code in Saudi Arabia started in 2010.

Keywords: Agency Costs, Ownership Structure, Dividend Policy

Research method: Quantitative

**New Dinosaur Footprints from the Wapiti Formation  
(Upper Cretaceous) of Alberta, Canada**

Nathan Enriquez

*Master*

Palaeoscience Research Centre

*Poster Presentation*

Dinosaur footprints are useful for studying aspects of their biology which are difficult to determine using skeletal material alone, such as inferences of social behaviour, speeds and gaits. Canada is one such country with an extensive record of dinosaur prints, yet these have been relatively understudied in comparison to the Canadian dinosaur bone record. Recent fieldwork by the Boreal Alberta Dinosaur Project (BADP) in August 2018 further documented a large dinosaur track site along the Red Willow River in central-west Alberta. At more than 100 metres long, the site is the largest known track locality within the Wapiti Formation (Upper Cretaceous; approx. 71 million years old). How this site can add to our understanding of Late Cretaceous dinosaurs in this part of the world is the main theme for this research. To investigate this, on-site grid mapping of footprints is being combined with photogrammetric methods to reconstruct computer models of many of the prints as well as document the relationships between tracks in both space and time. Although this work is ongoing, preliminary findings indicate the presence of at least three different varieties of dinosaur, including tyrannosaurids, smaller theropods and duck-billed hadrosaurids. A range of tyrannosaurid footprint sizes from both this and other nearby sites is being used to reconstruct a novel growth series of the foot for these dinosaurs, while the presence of two-toed tracks may also be the first occurrence of dromaeosaurid ("raptor") tracks in Canada. Aligned trackways from multiple individuals have also provided an indication of social behaviour in both hadrosaurids and small theropods. The site is therefore a rich and important means of studying the dinosaurs of Western Canada at this time in the Late Cretaceous and further builds on what is known from the accompanying dinosaur bone record.

Keywords: Dinosaurs, Ichnofossils, Wapiti Formation, Cretaceous, Alberta

Research method: Mixed Method

## **Impact of Intellectual Capital on Financial Performance**

Rayed Obaid Alobaid

*Doctorate*

Faculty of Science, Agriculture, Business and Law (SABL)

UNE Business School

*Poster Presentation*

This study's aim is to investigate the relationship between Intellectual Capital; which includes four core components, Human Capital, Structural Capital, Capital Employed and Relational Capital; and financial performance of Islamic versus conventional banks in the Arab Gulf Cooperation Council (GCC) Countries using Value Added Intellectual Coefficient (VAIC) methodology. The sample size of this study is 67 listed banks for the period 2009-2016.

Keywords: Intellectual Capital, GCC, VAIC, Financial Performance

Research method: Quantitative

# **Identical Genes, Unique Environments: A Qualitative Exploration of Persistent Monozygotic-twin Discordance in Literacy and Numeracy**

Sally Larsen

*Doctorate*

Faculty of Humanities, Arts, Social Sciences, and Education (HASSE)

School of Behavioural, Cognitive and Social Sciences

*Poster Presentation*

Twin studies of literacy and numeracy development among school students have shown that genes play a significant role in the emergence of individual differences in achievement. The same studies have also shown that factors affecting individual twins differently within pairs - usually termed “unique environment” - account for most of the variance not explained by genes. Monozygotic (MZ) twin pairs control for genes, gender, age and aspects of the home and school environment shared by twins. Thus any difference between MZ twins in academic outcomes can be attributed to the unique environment experienced by each twin. This study aimed to explore possible unique environmental factors impacting on differential academic trajectories using a sample of 1284 MZ twin pairs from the Australian Twin Study of the NAPLAN. From 551 MZ twin pairs with three or four sets of NAPLAN test results, we identified fifty-five pairs who were substantially and consistently discordant in reading, numeracy or writing between Grades 3 and 9. Parents were contacted for interview, resulting in 40 semi-structured interviews exploring possible contributing factors in the twins’ discordant achievement. Thematic analysis of interview data revealed three major themes, interpreted by parents as possible contributors to persistent academic discordance: biological mechanisms, school-based factors and personal factors.

Keywords: NAPLAN, Discordant Monozygotic Twin Pairs, Literacy, Numeracy, Writing, Unique Environment

Research method: Mixed Methods

## **Cure Kinetics, and Characterisation of Two Epoxy Resins**

Sameer Ahmed Awad

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Faculty of Science, Agriculture, Business and Law (SABL)

School of Science and Technology

*Poster Presentation*

Understanding the process of curing kinetics of epoxy resins has great importance in developing and optimising curing cycles for different industrial applications. This can contribute to improving the quality of the final product and minimising the manufacturing-associated costs. The current work aims to improve the heat resistance of two epoxy resins - the hydrogenated diglycidyl ether of bisphenol A (aliphatic structure, HDGEBA) and diglycidyl ether of bisphenol A (aromatic structure, DGEBA) - with different curing times. The epoxy resins were cured with 2, 4, 4-trimethyl-1, 6-hexanediamine (TMDA) for different curing times (7, 14, 21, and 35 days) at room temperature. The cure behaviour was characterised using FTIR to evaluate the degree of curing, while differential scanning calorimetry (DSC) analysis was used to follow the changes in the glass transition temperature,  $T_g$ , during the curing process. The mechanical properties of the resins were investigated for different reaction times of two epoxy resins using tensile tests. With increasing reaction time,  $T_g$  was found to increase for both two epoxy resins.

Keywords: Cure Kinetics, Epoxy Resins, Thermal Stability

Research method: Mixed Methods

# **Does Thermal Stress and Resource Limitation Impact on Ant Communities?**

Sean Moore

*Doctorate*

Faculty of Science, Agriculture, Business and Law (SABL)

School of Environmental & Rural Science

*Poster Presentation*

In a rapidly changing climate, one important issue is to predict ecological responses within native ecosystems. There is a need to understand how changes to resource availability will influence responses by critical taxa in ecological communities. This understanding is crucial in predicting future trends in restructuring of common species populations as well as restructuring of trophic and ecological interactions. In addition, there is also a need to be able to assess the potential impacts in a way that will yield relevant information at a continental scale. Common and important organisms providing critical ecosystem functions are the ants (Formicidae). Ants are ideal subject for resource modification experiments, as they have a very active role in ecosystem interactions and are sensitive to changing conditions. By observing how ants respond to a warming climate, we can have a better understanding of how their responses will impact on other taxa at a wider ecosystem scale.

Keywords: Thermal Stress, Ant Communities, Resource Partitioning

Research method: Quantitative

# **Blockchain Technology Acceptance and Digital Finance in Gulf Cooperation Council (GCC)**

Yousef Alabbasi

*Doctorate*

Faculty of Science, Agriculture, Business and Law (SABL)

UNE Business School

*Poster Presentation*

Technology has a serious impact on today's world economy. Many countries have been developing technology as a real asset. Blockchain technology is one of the most significant technology set that will be trending in the next decade. It has become an epic and significant decision that organizations may make in the next few years, as integrated business solution enabling institutions to integrate business functions, operations, and processes in a decentralized distributed ledgers technology. This technology will transform the business world and Economy in solving the limitations created by centralization and system inefficiency. Accordingly, with the high demanding and complexity of growing economies such as Gulf Cooperation Council (GCC) countries, the need for a typical solution technology is a game changer. Which will lead the GCC to a solid base of the economy. The Blockchain technology can be applicable in many different fields such as Banking, education, Health, finance, government and trade...etc. This research will propose a conceptual framework for the acceptance of Blockchain technology and Innovation in the GCC, particularly in Saudi Arabia. The most common technological theories will be used such as Innovation Diffusion Theory (IDT) & Technology Acceptance Model (TAM) Also, more research can be conducted in future as the system might be integrated within these countries.

Keywords: Blockchain, Digital Finance, Innovation

Research method: Mixed Methods

**KEYNOTE SPEAKERS**

**INVITED SPEAKER**



# KEYNOTE SPEAKER

## Keynote Address – Day 1

Pollution, Peanuts, Prawns and People: A Scientific Career Spanning Many Subjects and Sectors

### **Dr Kate Wilson**

Executive Director Communities and Greater Sydney  
Office of Environment and Heritage

The connecting theme of my career has been the application of science to real-world problems. My career has spanned science to support agriculture, aquaculture, marine science and the environment. I have worked in a range of organisations, including a university, a United Nations agency, establishing and running a new research organisation, and government research organisations. From 2007-18 I was in executive science leadership positions, first heading the CSIRO Wealth from Oceans Flagship and then leading delivery of science for the New South Wales Government's environmental programs. In 2018 I took up a new role leading program delivery for NSW in sustainability, climate adaptation, urban biodiversity and liveability. In this role I rely heavily on scientific data and evidence to inform program delivery.

My career has built off my undergraduate degree and PhD in genetics and molecular biology. I will talk about how I have used my science background to take on such a variety of roles, all of which have science at the core. I will also reflect on how my career has been shaped by my core interests and values, which I can trace right back to my childhood.



# KEYNOTE SPEAKER

## Keynote Address – Day 2

Empowerment through Education

### **Mr James Horsburgh**

Partner at McIntosh McPhillamy & Co Legal Services

Empowerment through education!! After suffering a spinal cord injury in 2004 following a diving accident James' world came to a crashing halt. Having to literally rebuild his life, from learning how to operate a wheelchair to dealing with the day-to-day frustrations of being a quadriplegic. Despite all this there was one staple in James' life that not only provided a welcome distraction during this time, but would prove to be fundamental in assisting James in creating the life he enjoys today; That one staple was education!!



# INVITED SPEAKER

## Special Presentation – Day 2

A non-traditional pathway to a career in research

**Professor Lewis Kahn**

Associate Dean Research

Faculty of Science, Agriculture, Business and Law (SABL)

There is probably no such thing as a single, ideal pathway for a research career. In practice, preparation may start traditionally with the transition from school to undergraduate to postgraduate to postdoc and then to a research position. Or, as in my case, it can have unassuming beginnings and utilise less than obvious pathways. My pathway started with no clear direction, relying on whichever institution would take me after leaving school, passed through years of shifting irrigation pipes, milking cows, managing livestock, classing wool and fencing: and then there were the dirty tasks. If there are a number of pathways for a research career, there remains a core set of skills on which a researcher can rely. Ideally, these skills are underpinned by a deep knowledge, a passion for discovery, a preparedness to stay the journey, the ability to adapt to a changing world, and a comprehension of where your interest/s lie in the bigger schema of your colleagues, collaborators, institution and global priorities. I'll provide an experiential account of my own research pathway and how the key focus is on skill development and attitude.





## **SPECIAL SESSIONS - DAY 1**



# **Planning and Conducting Mixed Methods Research and the Common Pitfalls to Avoid**

Professor Kim Usher

Faculty of Medicine and Health (M&H) / School of Health

*Oral Presentation*

Mixed methods research is an emergent research methodology that supports the systematic integration of quantitative and qualitative data within a single study. In essence, the premise behind this approach is that such integration permits a more complete understanding of a phenomenon than one approach alone. This presentation will focus on the key components of mixed methods and mixed methods designs and provide an overview of the common pitfalls that need to be avoided.

Keywords: Mixed Methods Research; Methodology;

**The approach to doctoral studies in AgLaw and lessons learnt  
about success**

Professor Paul Martin

Director, Australian Centre for Agriculture and Law

*Oral Presentation*

The Australian Centre for Agriculture and Law is a law-based multidisciplinary research centre at UNE. The focus of its work is rules and rules administration issues affecting rural people and rural places. Its main research has concerned natural resource governance, the welfare and rights of rural people (notably indigenous communities); and risks and governance issues of rural innovation. Over the last 14 years the Centre has conducted many studies of these issues in Australia and other countries (e.g. USA, Brazil, and Iceland), and has had many doctoral students who have successfully investigated issues related to water, forests, invasive plants and animals and Aboriginal and other indigenous people's cultural and natural resource interests.

Professor Martin is a successful doctoral student supervisor, who prides himself on the fact that to date none of his candidates has failed examination, or even been required to make major changes to their theses, and that some have won international and UNE recognition for the quality of their work.

In this presentation Professor Martin will illustrate some of these issues, and some of the methods used to investigate these issues. He will conclude with some of the main lessons that he has learned about success in doctoral studies.

## **Media Training: Practical Tips on Effectively Sharing Research Stories through the Media**

Ms Catherine Duff

Corporate Communications Manager  
Office of Advancement, Communications and Events

When you are thinking about sharing your research with a bigger audience, the ever-changing media landscape can make it difficult to know where to start. This session will look at what journalists are seeking from research stories, how to build your profile and practical steps to take if the media come calling.

## **Meet your HDR Support Network Speed Conversations**

Ms Eleanor Colla and Ms Kate Pardy

University of New England

In these concurrent sessions HDR students will meet one-on-one with a number of staff from UNE's student support networks. You will learn more about the library, academic skills officers, UNE Sport, counselling, IT services, and many more, giving them the opportunity to put names, faces, and services together. If you would like to know more about the support and services offered at UNE then these sessions are for you!

## **Research to Commercialisation: Are You Sitting on an Idea?**

Dr Lou Conway

UNE SMART Region Incubator

The UNE SMART Region Incubator or SRI as it is known, is explained, what our startups are building, how we work with founders and how we can help you as a research student to explore commercial opportunity for your research. This session is about throwing open the door to commercial possibility for tech transfer and other approaches to your research.

Dr Lou Conway, Director of the UNE SMART Region Incubator and Mr Gary Morgan, Expert in Residence and advisor to SRI Startups on their commercialisation strategy will lead a discussion about how we can assist you.



## **SPECIAL SESSIONS - DAY 2**



## **Cloud.UNE is the University's cloud storage solution for research data**

Thomas Reeson

Research Data Librarian

Cloud.UNE is the University's cloud storage solution for research data. All UNE academic staff and HDR candidates have access Cloud.UNE, with an initial quota of 500 Gb and an option to apply for more if needed. This cloud storage service is accessible from anywhere with internet connect via <https://cloud.une.edu.au/>.

In this session we will discuss how to access your Cloud.UNE, how to upload and share files, and data archiving requirements for HDR students.

# **Statistical Inference for Stochastic Simulation Models with Applications in Cell Biology**

Dr Brenda Vo

Faculty of Science, Agriculture, Business and Law (SABL)

School of Science & Technology

*Oral Presentation*

Stochastic simulation models are increasingly used to capture the real-world phenomena for many important systems in biology, ecology and medical sciences. These models have several advantages: first, they are able to incorporate important characteristics such as heterogeneity and stochasticity; second, they produce image-based and movie-based information which is ideally suited to collaborative investigations involving statisticians and applied scientists. However, the likelihoods, the functions that describe the probability of the observed data given parameter values, for these models are not analytically or computationally tractable. This makes statistical inference for these models challenging. To overcome these limitations, several new Bayesian “likelihood-free” techniques have emerged. In this talk, I will discuss about the principles as well as advantages and disadvantages of these methods.

# Preventing Post Streptococcal Immune Complications: Why is it an Elusive Target?

Dr Natkunam Keethesan

Faculty of Science, Agriculture, Business and Law (SABL)

School of Science & Technology

*Oral Presentation*

*Streptococcus pyogenes* (group A streptococcus; GAS) alone is annually responsible for over 700 million cases of infection. If untreated, these infections lead to autoimmune sequelae including Post Streptococcal Glomerulonephritis (PSGN), Acute Rheumatic Fever and Rheumatic Heart Disease (ARF/RHD) and neurological complications. Although GAS and *Streptococcus dysgalactiae* subspecies *equisimilis* (SDSE or  $\beta$ -hemolytic groups C and G; GCS and GGS) express many common virulence factors (including the M protein), for over a century, ARF/RHD has been considered to be solely triggered by GAS. GAS M protein, a protein with structural homology to host proteins has been the major protein implicated in the autoimmune sequelae.

Using an array of immunological, histological, electro and echocardiographic techniques we developed the Rat Autoimmune Valvulitis model that is similar to ARF/RHD in human. Using adoptive transfer experiments we identified that both streptococcal M protein specific antibodies and T-cells can initiate and independently drive the autoimmune pathology. We also found that upregulation of VCAM-1 and ICAM-1 facilitates the migration of M protein specific T-cells into cardiac tissue. More importantly, we discovered that SDSE can also induce carditis mediated by interleukin 17A and interferon- $\gamma$  indistinguishable to the pathology initiated by GAS. Therefore, we are of the view that ARF/RHD can no longer be considered as a complication unique to GAS.

Current studies conducted at the University of New England are aimed at identifying antibodies to specific streptococcal peptides that are common in animals that develop carditis, regardless of streptococcal group or M type used to induce carditis. Antibodies to these pathognomonic peptides will be specific as diagnostics, than the currently available non-specific ASOT and anti-DNAse tests. Furthermore we are also investigating the pathogenesis of potential neurological and nephrological complications associated with GAS and SDSE infections, as therapeutic and interventional strategies aimed at eradicating GAS infections alone, may not be adequate to prevent post streptococcal immune complications.

**Keywords:** Host-Pathogen Interactions, Animal Models, Autoimmune Responses, Streptococcal Infection



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