



THE UNIVERSITY OF  
**NORTHAMPTON**  
Graduate School

**Annual Research Conference 2014**  
**For Postgraduate Research Degree Students**  
**and Early Career Researchers**

***Research Diversity***

**Hosted by the Graduate School**

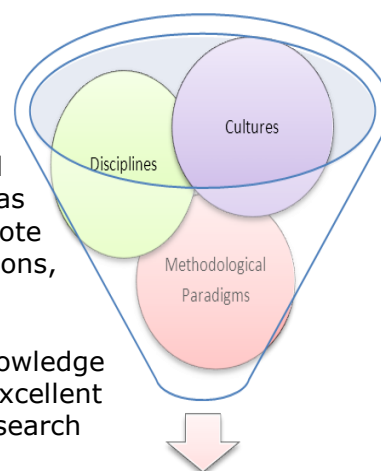
**Thursday 26th June 2014**  
**at**  
**Holdenby Lecture Theatre 3**  
**Park Campus**

This year's PGR & ECR Conference is themed not only to reflect diversity in research activities but also amongst researchers. Researchers are drawn from divergent backgrounds in terms of disciplines within the university, research projects within Schools and also from cultures around the world. Research from the different paradigms such as qualitative, quantitative and mixed methods, which promote knowledge transfer as well as initiating debates and discussions, will also be presented.

This conference aims to facilitate the sharing of research knowledge between our students and staff, provide a platform for excellent research communication and promote the broad scope of research undertaken at the University of Northampton.

There will be four **Diversity** sessions with four or five presentations in each session. Each presentation will last for ten minutes and five minutes are allocated for questions. We do hope you enjoy the day.

*Research Student Conference Working Group:- Anna Crouch, Chi Jack-Osimiri, Benny Kuruvilla, Joshua Onyango, Rebecca Rickaby. Reserve chair: Sylvester Ajah.*



Research Diversity

### MORNING SESSIONS: HOLDENBY LECTURE THEATRE 3

09:00	Registration & refreshments
09:30 <b>WELCOME</b>	<b>Prof Jon Stobart: School of Social Sciences</b>
09:45 <b>Diversity A</b>	<b>Chair: Anna T. Crouch</b>
Emma Clarke	Am I a proper researcher?
Kathryn Harrold	Predicting habitat potential for pollinators in the Nene Valley Nature Improvement Area.
Mike Ogunmiluyi	Sound jurisprudence as a source of legitimacy for quasi-judicial entities?: A case study of the World Bank's Inspection Panel.
Alba de Béjar Muiños	Diasporic technobodies. Tracing the genealogy of the cyborg through cinema and literature: Feminist and postcolonial contestations.
Deborah Pugh	Listening to different voices in families.
11:00 <i>Refreshments</i>	
11:30 <b>Diversity B</b>	<b>Chair: Chi Jack-Osimiri</b>
Sylvester Ajah	Energy efficient cellular centric Machine to Machine (M2M) communications architecture for smart cities.
Chris Jackson	Assessing the implications of British drug treatment policy post-2010: A Foucauldian Discourse Analysis of 'Putting Full Recovery First'.
Ali Hassan	Active vibration control for a Stirling Engine Generator.
Tolulope Eboka	Cultural Violence against the Girl-Child in Northern Nigeria
12:30 <i>Lunch</i>	

**AFTERNOON SESSIONS: HOLDENBY LECTURE THEATRE 3**

13.30 Diversity C		Chair: Benny Kuruvilla
Chi Jack-Osimiri	The legacy of legal ambiguity and uncertainty in the Trade Mark Directive.	
Leticia Melo dos Santos	Application of biotechnology in polyphenol reactions for stabilising collagen.	
Anna T. Crouch	Nursing and midwifery students' perceptions of how dyslexia impacts on them, and the coping strategies they use to manage difficulties associated with dyslexia in clinical practice; an embedded case study.	
Anna Kopec	Empathy in social enterprise: To what extent does empathy manifest itself in social enterprise?	
Joshua Onyango	Prevalence, risk factors and vaccination efficacy of contagious ovine ecthyma (orf) in England.	
14:45 Refreshments		

15:15 Diversity D		Chair: Joshua Onyango
Imdad Ali	Exploring the talent management strategy within Pakistani banking industry.	
Alyaa Al-Barrak	Network Coding/Cryptography for Wireless Network Security over Galois Field Theory.	
Mohamed Redha Sidoumou	Human behaviour simulation.	
Payal Jain	Social Value Creation: Developing a definitional framework of social value.	
16:15 Close		

**Please turn over to view the conference abstracts,  
arranged by speaker surname.**

**Sylvester Ajah**

Computing, School of Science and Technology

**Energy efficient cellular centric Machine to Machine (M2M) communications architecture for smart cities.**

Smart city is defined by Navigant Research as the integration of ICT and communications technology into a strategic approach to sustainability, citizen well-being and economic development [1]. Also, a smart city is defined as the connecting of devices with little processing power together to solve problems in the city [2]. To this end, smart devices have being identified as the most feasible approach to achieve cities that are sustainable, improve citizens well – being and lead to economic development as illustrated by the former definition. To achieve smart city, the smart devices will be applied to improve virtually all the human endeavours. But the best energy efficient architecture that will enable connections between all these devices still remain vague as a result of divergent applications and their associated unique operations' characteristics. This paper proposes a unique hybrid energy efficient cellular centric architecture for smart cities development.

*[Sylvester Ajah, Ali Al-Sherbaz, Scott Turner, Phil Picton]*

**Alyaa Al-Barrak**

Computing, School of Science and Technology

**Network coding/cryptography for Wireless Network Security over Galois Field Theory.**

Network Security (NS) is a concept to protect data transmission over network. Security is a method to making sure that unauthorized people cannot influence the data. Coding provides explicit ways of ensuring that messages remain readable even in the presence of error. Network coding points out to each intermediate node taking its received packets, computing a linear combination over a finite field, and forwarding the result to another node until reaching the final destination.

Data integrity is a major concept in any coding system. For example, if a packet is traveled over a network which is prone to noise, interference and channel fading, then it could be altered by a network coding method and determining the optimum coding coefficients is a challenge.

Complexity and the overhead are two significant keys in the NC which are used to measure the efficiency of the coding algorithms in terms of errors correction rate and computational power.

The aim of this research is to evaluate and design an algorithm for wireless communication networking using Galois Field Theory taking into account data integrity. This algorithm will be able to detect the damaged data and decrease the bit errors rate.

**Imdad Ali**

Northampton Business School

**Exploring the talent management strategy within the Pakistani banking industry.**

Talent management (TM) has been defined as a systematic and strategic approach to the management, development and retention of human resources. TM proposes that people represent a source of competitive advantage for organizations. However, TM is a relatively new concept in the field of human resources management both as an academic discipline and in practice. As a result, it lacks a strong conceptual foundation in the academic literature which hampers our understanding of TM and its implications. TM thus presents a topical and challenging area of enquiry. Accordingly, the overall aim of this research is to investigate TM strategy both conceptually and practically within the unique context of a developing economy.

This empirical research contributes to knowledge and understanding in four significant ways. Firstly, understanding of HRM policy and practice within a developing economy that will fill a gap in the literature on the specific topic of talent management. Second, the research contributes methodologically through novel adoption of a mixed method approach. Third, this research contributes conceptually to the holistic understanding of TM with special reference to the banking sector of Pakistan. Lastly, this research contributes practically to policy making and the development of effective TM strategies for Pakistani organizations.

**Emma Clarke**

School of Education

**Am I a proper researcher?**

What is research like for a PhD student just starting out and how it is possible to tell if and when you are a 'proper researcher'? Through this paper I will compare academic and day-to-day research, and look at definitions of what research actually is and how this compares with the skills I have developed so far. Different research strategies and techniques will be considered from well-established researchers as well as the six stages of student postgraduate research. Advice for successful research and a set of competencies will be discussed (as well as how to avoid 'paralysed procrastination') and the seemingly irrational importance of purchasing new stationary before undertaking a research project.

**Anna T. Crouch**

School of Health

**Nursing and midwifery students' perceptions of how dyslexia impacts on them, and the coping strategies they use to manage difficulties associated with dyslexia in clinical practice; an embedded case study.**

A student nurse or a student midwife is required to be fit for practice, meet the nursing and midwifery council's standards effectively and be competent, with or without disabilities and or reasonable adjustments, at the point of registration without supervision. Higher education authorities are obliged to provide reasonable adjustments to any disabled students without compromising any of the standards and competences to be achieved. Therefore an understanding is needed on the topic and on its possible impact on the student, and of strategies that could help them achieve in clinical practice. However, there is little research on this in the nursing and midwifery fields.

The aim of the study is therefore to explore the perceived impact of dyslexia on the student nurse and the student midwife and the coping strategies they develop/use when in clinical practice using an embedded single case study approach. The Glasarian grounded theory approach will be used to collect and analyse data. Research ethics approval has already been sort and twelve participants have been recruited. Data analysis is also in progress.

**Tolulope Eboka**

School of Social Science

**Cultural Violence against the Girl-Child in Northern Nigeria**

The United Nations Population Funds records that, "Child marriage is a global scourge as, more than 140 million girls will marry between 2011 and 2020 and of the 140 million girls who will marry before they are 18, 50 million will be under the age of 15" (UNFPA, 2013: 1). The practice of child marriage span diverse cultures and each 'child bride' has her own unique story.

The aim of this research is to contribute to an existing knowledge of child marriage in northern Nigeria, by exploring the practices of child marriage in this region. The research will explore the underlying factors which facilitate the practice of child marriage in northern Nigeria. It is intended that the outcome of this research will shed more light to this practice and at the end give recommendations that will assist organisations in this area of specialization.

**Kathryn Harrold**

School of Science and Technology

**Predicting habitat potential for pollinators in the Nene Valley Nature Improvement Area.**

Pollination of crops by insects is estimated to be worth £400 million a year in the UK. Insect pollinator declines have been widely reported, although recent evidence suggests these declines are slowing, it is of great importance that pollinator populations are maintained if not reversed. Agricultural intensification and landscape change are considered the greatest causative factor of pollinator declines, therefore new methods of accessing landscapes and targeting areas for conservation need to be developed. In 2011 the DEFRA opened a bidding competition for the designation of 12 Nature Improvement Areas (NIA), with a total funding of £7.5 million. The University of Northampton was assigned to look at ecosystem service provision, with this specific project looking at pollination within the NIA. This research aims to use current landscape scale knowledge and geographical information systems to produce a method of predicting habitat suitability for insect pollinators. The method will be used to explore current landscape effects as well as to produce future scenarios, which can be used to inform both conservation and agri-environment schemes within the NIA. The model produced will be verified using pollinator data collected in the field. Here we present preliminary results and possible ways in which the project will develop.

*[Landscape Biodiversity Research Group: Kathryn Harrold, Jeff Ollerton, Jim Rouquette & Duncan McCollin]*

**Ali Hassan**

School of Science and Technology

**Active vibration control for a Stirling engine generator.**

Stirling Engine is one of the most efficient practical engines ever built that could run on any heat source. The Stirling engine used in this research generates electricity and connects to the grid at a frequency of 50Hz. While the engine vibrates at 50Hz, an existing passive tuned mass damper (TMD) is fitted to damp the vibration at this single frequency. Recently, the European Network of Transmission System Operators for Electricity (ENTSO) has brought new regulations that impose a wider frequency range of operation between [47-53] Hz that the current passive TMD will not cope with. Active vibration control techniques can achieve a far better performance by employing adjustable external actuators. This research investigates the performance of two active damping control strategies in mitigating the vibration of the Stirling engine to vibration amplitudes below 20µm of vibration amplitude in order to increase the range of operation from [50±0.5]Hz to [47-53] Hz. A simplified vibration model of the Stirling engine generator is proposed and experimentally verified. Two suitable active control techniques are discussed and analysed in the time and frequency domains: Feedforward-feedback with zero-placement control and linear quadratic (LQ) optimal control.



**Chi Jack-Osimiri**

Law, School of Social Sciences

**The legacy of legal ambiguity and uncertainty in the Trade Mark Directive.**

This article will map out the difficult and drawn out history of the Trade Mark Directive (TMD) in two stages; beginning with a memorandum in 1976 that was marked by a succession of drafts, discussions and new proposals lasting some eleven years before the birth of the first Directive. The second part of this article will briefly continue the trace post-the first Directive to the present version of the Directive to date. It should be noted that the focal point of this article will be restricted to the core areas that are relevant to the tension of trademark proprietors' rights and free trade in EU trademark law, namely; trademark infringement and grounds for refusal of registration. In reflecting on the legacy of legal ambiguity and uncertainty that has characterised this history, this article concludes by considering its main research question; what were the key issues that influenced the negotiations of the Directive? It is anticipated that the identifying of these factors will contribute towards ascertaining a single coherent rationale for the inconsistencies found in EU trademark law.

**Chris Jackson**

Psychology, School of Social Sciences

**Assessing the implications of English drug treatment policy post-2010: A Foucauldian discourse analysis of 'Putting Full Recovery First'.**

Contemporary political discourse around drug use entrenches a problematic view of those who use drugs, representing them as 'damaged', a 'burden' and 'a threat' to society. These discourses sustain an understanding of the drug user that has long reaching implications for how people who have experienced drug-related issues understand their experiences and constitute their sense of self. Historically, British drug policy development has been characterized by pragmatism, compromise and flexibility. Discarding these noted attributes, the UK coalition government's 2012 'recovery roadmap', Putting Full Recovery First, instead promotes a one-size-fits-all drug treatment agenda where abstinence from all chemical dependency is represented as the only acceptable treatment outcome. This presentation communicates salient findings from a Foucauldian discourse analysis of Putting Full Recovery First. It explores how 'drug use' and 'full recovery' are constructed within the text, and considers the implications of these policy constructions for individuals including drug service users and treatment personnel.



**Payal Jain**

Social Enterprise, Northampton Business School

**Social Value Creation: Developing a definitional framework of social value.**

Social value creation is central to the operation of social enterprises; and prior research has identified that social capital and social cohesion (which collectively produce community cohesion) provide the prerequisite foundations for social value creation (Griffiths et al., 2013). The UK government, additionally, is contributing to the creation of social value through legislation (i.e. the 2012 Social Value Act) which requires public authorities to consider social and environmental value, in addition to economic value, in public contracting processes (Social Value Act, 2012). Due to a paucity of research that seeks to identify and quantify what constitutes social value (Emerson, 2013), this research project seeks to develop a holistic framework of social value creation that can be used by the private, public and third sectors to understand the impact of their actions and shape the future policy in relation to social value.

**Anna Kopec**

Social Enterprise, Northampton Business School

**Empathy in Social Enterprise: To what extent does empathy manifest itself in social enterprise?**

Empathy is emerging as an important area of study related to social cognition and offers potential contributions to various disciplines including a more socially driven understanding of social enterprise. Empathy is becoming established as an interconnected term not centrally located within a specific discipline and appears to link various experiences and activities including social enterprise. The need to satisfy the 'double-bottom line' is characteristic of the social enterprise sector as social enterprises seek to direct contributions towards the beneficiary category as well as maintaining financial viability. It is argued empathy is related to social enterprise because it is perceived as motivation to action. Schumpeter's (1934) early account of economic sociology provides support for social enterprise motivation stemming from both individualistic and collective agendas. The proposed research will make an original contribution by exploring empathy as a crucial concept in motivating individuals to collaborate to form a social enterprise in order to tackle a social problem.

**Leticia Melo dos Santos**

ICLT (Institute for Creative Leather Technologies), School of Science and Technology

**Application of biotechnology in polyphenol reactions for stabilising collagen.**

Conventionally, plant polyphenols are employed in leather tanning as extracts from natural products, such as leaves, barks and wood. The vegetable tannin, however, is not always ideal for tanning, because the chemical species are highly reactive towards collagen and tend to react on the surface of the skin. Therefore, it may result in superficial tanning and poor penetration into the skin. The process must be carried out in diluted baths, taking a long time to complete, which increases the cost of leather production, one of the reasons why vegetable tanning was replaced by chrome and combination tannages.

The research aims at the application of laccase, an enzyme, as a catalyst for polymerisation of small phenolic molecules, such as catechin, transforming a non-tannin substance into a potential 'tannin' type molecule. Results showed that the catalytical effect of laccase on catechin indicates high enzyme activity due to its high initial reaction velocities. The enzyme-catalysed reactions of catechin polymerisation on hide powder showed an improved capacity of stabilising collagen, i.e. tanning, in comparison with no addition of laccase.

**Alba de Béjar Muiños**

Marie Curie Early Stage Researcher, School of the Arts

**Diasporic technobodies. Tracing the genealogy of the cyborg through cinema and literature: Feminist and postcolonial contestations.**

My project traces the genealogy of the figure of the cyborg and its feminist and postcolonial contestations through a transdisciplinary analysis that combines Feminist, Postcolonial, Citizenship, and Posthuman research and applies it to the study of this trope in several science fiction and speculative fiction novels and films released since the 1970s. The project asks whether the dissemination of this figure in the visual/cinematic medium creates a shift in perception vis-à-vis its literary expression. The texts selected include several feminist science fiction novels from the 1970s-1990s; two mainstream science fiction films —Ridley Scott's *Blade Runner* (2007) [1982] and James Cameron's *Avatar* (2009); and two contemporary feminist speculative fiction 'contestations' of these films by the diasporic writers Nalo Hopkinson (*Midnight Robber*, 2000) and Larissa Lai (*Salt Fish Girl*, 2002). The goal is to demonstrate how, despite criticisms of the figure of the cyborg as theorized by Donna J. Haraway in the mid-1980s (*Simians* 141), feminist and postcolonial readings of this figure can still be extremely useful in deconstructing and reconstructing notions of identity, home, and belonging in non-totalizing and non-essentialist ways.

**Mike Ogunmiluyi**

Law, School of Social Sciences

**Sound jurisprudence as a source of legitimacy for quasi-judicial entities?: A case study of the World Bank's Inspection Panel.**

The Inspection Panel (the Panel or IP) was established by the World Bank (the Bank) in 1993 with the mandate to investigate whether the Bank has complied with its own operational policies and procedures (OP&Ps) in the context of the design, appraisal and implementation of World Bank development projects.

This paper will examine the normative values of the Panel as a quasi-judicial entity. It compares its jurisprudential credentials with those of Investments Arbitration. (Arbitration being generally considered an established quasi-judicial entity). The authority and essence of judiciary and quasi-judicial bodies are generally premised on their legitimacy or at least, apparent legitimacy. While the legitimacy of many of these bodies is not in doubt by virtue of being enacted by state parliaments, others like the Panel will have to prove and establish theirs through their formation processes, independence, adjudicative procedures and efficacy, and the 'jurisprudential quality' of decisions emanating from them.

**Joshua Onyango**

Moulton College, School of Science

**Prevalence, risk factors and vaccination efficacy of contagious ovine ecthyma (orf) in England.**

Orf is a viral disease found in English sheep flocks which can cause economic losses. It is a zoonosis with little epidemiological research available in the UK. In 2012, 3000 questionnaires were sent to English sheep farms in order to investigate the prevalence of orf, determine vaccination efficacy and to identify some of the potential risk factors. The usable response rate was 25.4%. The usable farms (N=762 in the years 2011 and 2012) were used to model the percentage of animals affected on the farm, and the probability of a farm being found with the disease. The disease prevalence (DP) was standardised for the year and calculated as 1.88% for ewes and 19.53% for lambs. The disease risk ratio (RR) for the use of the vaccine was calculated as 2.04 for ewes and 0.75 for lambs, and therefore the study found that lamb vaccination was beneficial ( $RR < 1$ ). Weed infestation and an increased number of orphan lambs were associated with increased cases of orf. We conclude that the DP in both ewes and lambs affect each other, though the impact is higher for lambs in the presence of increasing prevalence in ewes. A short lambing season lowers the probability of a farm experiencing cases of orf. Vaccination was effective in lambs but not in ewes, though lambs benefitted when ewes were vaccinated (reduced orf prevalence in lambs born from vaccinated ewes), probably because any unvaccinated ewes may have been carriers that could spread the virus to the new-born lambs.

**Deborah Pugh**

Doctorate in Professional Practice, School of Health

**Listening to different voices in families.**

This research is exploring the experiences of twelve families using Augmentative and Alternative Communication (AAC) systems within the home. The families are currently using a variety of AAC systems ranging from communication books and Picture Exchange Communication system (PECs) to high tech voice output communication aids. The research involves understanding the different perspectives of the 'whole' family which includes the parents, the young person with complex communication needs and their siblings. A variety of qualitative methods will be used including in-depth interviewing, a draw and tell approach for younger children and Talking Mats, a framework to allow young people with complex communication needs to express their opinions. The research will use a social constructivist grounded theory methodology to understand how families experience using AAC in the home. The early findings from the study have identified a number of key categories showing how families adjust and integrate the use of these systems in their daily routine. The results of this study will add new knowledge on the use of AAC and identify the issues and challenges that impact upon families who use them.

**Mohamed Redha Sidoumou**

Computing, School of Science and Technology

**Human behaviour simulation.**

Simulating a human's behaviour is a complex task. Research in psychology has to uncover a lot of secrets to better understand it. Among the components of human behaviour emotions play a very important role. They are involved in communication and even in decision making. In this work we present how emotions are explained from a psychological perspective and then how they are modelled computationally and used as a component of software agents. Then, we present our approach to modelling human behaviour and more particularly the emotions component whereby we use a combination of the OCC (Ortony, Clore and Collins) model and a multi-dimensional continuous space. Thus we will be able to represent even non-labelled emotions. We also use a 'focus' strategy in order to determine where any particular agent is putting its focus by creating a list of semantic interpretations of its internal and external world and associating priorities with each interpretation. Finally, we add a filter to simulate the inter-influence of emotions with other components like focus, perceptions and goals. We will create a framework enabling software agents to have a human like behaviour. The potential of such a framework could be simulating psychological techniques before applying them on a real subject, enhancing the way we communicate with machines and even evaluating the psychological theories used in this work.

[Mohamed Redha Sidoumou<sup>1</sup>, Kamal Bechkoum<sup>1</sup>, Phil Picton<sup>1</sup>, Karima Benatchba<sup>2</sup>  
<sup>1</sup> University of Northampton, <sup>2</sup> ESI]



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