



University of Salford
Research and Graduate College

SPARC 2003 The Sessions

Group A1 14:00-16:00 Bronte Room

Marie-Claire Boutrin
(Biosciences Research Institute)

Omar Mustafa Gerwash
(Biosciences Research Institute)

Emma Morley
(Biosciences Research Institute)

R. Huw Williams
(Biosciences Research Institute)

Boutrin, Marie-Claire

A Study Of The Effects Of Bee Venom (*Apis mellifera*) Phospholipase A2 On Gram-negative Bacteria

The aim of the study was to determine the effect of Bee venom phospholipase A2 (bvPLA2) on *Enterobacter cloacae* (*E.cloacae*), *Citrobacter freundii* (*C.freundii*) and *Escherichia coli* (*E.coli*) cultures.

The antimicrobial effects of bvPLA2 were studied by determining the survival of the different bacterial cultures by counting colony forming units (CFU) in the presence of different concentrations of bvPLA2 for different time periods. After 180 minutes, a decrease in survival for the *E.cloacae* culture was recorded for bvPLA2 concentrations of up to 10^{-8} mg/ml. Smaller bvPLA2 concentrations led to an increase in CFU numbers. All the bvPLA2 concentrations tested resulted in a significant decrease in survival of *C.freundii* after 180 minutes. *E.coli* survival was lowered with bvPLA2 concentrations of up to 10^{-4} mg/ml and 10^{-7} and 10^{-10} mg/ml. Other phospholipase concentrations resulted in higher CFU numbers. 1mg/ml bvPLA2 concentration caused an important decrease in CFU numbers in all three bacteria strains after 180 minutes.

The antimicrobial effects of bvPLA2 varied according to the bacteria strain, time of exposure to bacteria cultures, and the enzyme concentrations.

The study brings evidence that secretory phospholipase A2 can exert antimicrobial effects on gram negative bacteria.

Research Institute	Biosciences Research Institute
Thesis Title	A Study Of The Antimicrobial Effects Of Trypanosomes
Supervisor	Dr H. Foster and Dr V. Pentreath
School	School of Life and Environmental Sciences

Gerwash, Omar Mustafa

Development Of A Novel Technique For The Detection And Discrimination Of Different Strains Of The Parasitic Protozoan *Toxoplasma gondii*.

The protozoan parasite *Toxoplasma gondii* is a major causative agent of abortion in mammals and humans. At present only a single species is recognized, although within this group 3 distinct types can be identified. Current controversy exists as to which of these types is associated with severe disease in humans. Using regions of DNA (REP elements) we have developed a PCR that can diagnose type II strains as distinct from types I and III. We sequenced these segments of DNA in the three types and found that this region was indeed identical in types I and III. However in types II a large section in the middle was missing. The significance of this relating to parasite evolution and the epidemiology of human and animal disease will be discussed.

Research Institute	Biosciences Research Institute
Thesis Title	The Molecular Epidemiology Of <i>Toxoplasma gondii</i> With Regard To Humans.
Supervisor	Geoff Hide
School	School of Environment & Life Sciences

Morley, Emma K.

Congenital Transmission Of *Toxoplasma gondii* In Successive Generations Of Sheep.

Infections by the protozoan parasite *Toxoplasma gondii* are widely prevalent in both humans and animals worldwide. Toxoplasmosis is a common cause of ovine abortion and stillbirth due to the development of macroscopic lesions in the placenta. Previous studies carried out at the University of Salford have shown high levels of congenital transmission of *T. gondii* on a commercial sheep farm. Samples of placental tissue were collected immediately after birth as well as tissue samples from any aborted or stillborn lambs. DNA was extracted from the tissue samples and tested for the presence of *T. gondii* using SAG1 nested PCR. Members of certain pedigree families at this farm have been targeted and we report that high levels of *T. gondii* infection and associated abortion are maintained in these pedigree family lines. In addition to this we report similarly high levels of congenital transmission on another farm in a different geographical location. These results are further indicative of the significance of congenital transmission in the spread of *T. gondii*; and also support the suggestion that *T. gondii* is transmitted vertically over successive generations.

Research Institute	Biosciences Research Institute
Thesis Title	The Molecular Epidemiology Of <i>Toxoplasma gondii</i> With Regard To Vertical Transmission.
Supervisor	Geoff Hide
School	School of Environment & Life Sciences

Williams, R. Huw

Evidence To Support The Role Of Trans-Placental Transmission In The Life Cycle Of The Protozoan Parasite *Toxoplasma gondii*.

Toxoplasma gondii is a major causative agent of abortion in mammals and is commonly associated with severe disease in immunocompromised hosts. At present the cat is believed to be the main source of the parasite though recent evidence suggests congenital transmission may play an important role in some hosts.

As a part of a public health assessment, mice were trapped in the Cheetham Hill area of Greater Manchester over a period of 5 months and were tested for *T. gondii* infection. Of a total of 200 mice caught, 118 (59%) were found to be infected with the parasite. Sixteen of the total mice were also found to be pregnant. Twelve of these females were infected with *T. gondii*. Foetuses were examined and 47 (63%) out of a total of 63 were infected. All dams had passed the parasite on to at least one or more of their offspring giving a 100% frequency of transmission.

These high levels of congenital transmission mirror the results obtained in experimental models and support the theory that this route may be of greater significance than previously anticipated. This raises the question as to whether this occurs in other hosts including humans.

Research Institute	Biosciences Research Institute
Thesis Title	The Molecular Epidemiology Of <i>Toxoplasma gondii</i> In Different Host Organisms.
Supervisor	Geoff Hide
School	School of Environment & Life Sciences



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SPARC 2003 The Sessions

Group A2 10:00-12:00 Bronte Room

Sandy Louchart
(Information Systems Research Institute)

Yangang Xing
(Accountancy, Economics & Management Science
Research Institute)

Stuart Johnston
(Management Research Institute)

Shahida Choudhary
(Management Research Institute)

Xueyuan Liu
(Management Research Institute)

Hui Yang
(Management Research Institute)

Louchart, Sandy

Emergent Narrative, Towards a Narrative Theory of Virtual Reality

The emergence of Virtual worlds in addition to recent improvements and developments on Intelligent Agents and Artificial intelligence (AI), bring concerns regarding the articulation of the narrative in such environments. The project lies in the belief that classic authorial conceptions of the narrative form can be perceived as reductive regarding the role of a user, as opposed to a spectator, and should therefore be extended towards a more user-considerate definition. The emergent narrative concept argues for a process view of the narrative as opposed to a more traditional authorial approach and brings the novelty of a dynamic character-based narrative model. The mechanism investigated consists of bringing a narrative generated by the interaction between characters in the style of improvisational drama, rather than the authored narratives in more widespread use. The narrative experience would consist in a dynamic process where as well as the user, Intelligent Agents would control and determine the unfolding of the narrative. This performance-based style also puts a great deal of emphasis on the emotional systems of the characters as a narrative engine, needed to motivate their actions as well as to link with the user, who may be able to influence their emotional state by interaction.

Research Institute	Information Systems Research Institute
Thesis Title	Emergent Narrative, Towards A Narrative Theory Of Virtual Reality
Supervisor	Professor Ruth Aylett
School	Information Systems Institute

Xing, Yangang

Modelling Tourism Development To Support Sustainability-Oriented Policy Making.

One of the most difficult areas in the field of sustainable tourism development is how to systemically model tourism development in order to provide insightful understanding for policy making. System dynamics modelling may be one way forward in this respect.

The challenges faced by Sustainable Tourism Development policy makers are:

- the system complexity (detailed, dynamic and connective complexity),
- there is a need for a holistic approach for insightful understanding and more integrated planning in the tourism industry;
- many stakeholders have opposing viewpoints;
- there is a lack of a knowledge-sharing structure/ infrastructure in the tourism industry

The main stages for constructing system dynamics models include:

- Qualitative analysis: identify the main issues, goals, indicators, impacts and feedback loops using influence diagrams;
- Quantitative analysis: identify measurable indicators which are then represented in stock and flow diagrams;
- Investigate different scenarios to represent possible policy actions. One outcome would be a microworld - an Interactive Learning Environment. This would be created to enable the relevant stakeholders to periodically re-analyse and plan sustainable tourism development policy. It would foster a more integrated understanding amongst the various stakeholders.

The following questions and policy-making issues will be explored:

- What are the prospects for future tourism industry developments? What are the cost and benefits of growth in tourism for the economy? What policies and practices can help to reduce associated costs and maximise benefits, e.g. on environment, culture and society.
- What is the impact of ICT in tourism growth and performance? What is the role of innovation to enhance competitiveness of the tourism industry? How can innovation be facilitated in the tourism industry? What policies can be promoted for this purpose?
- What are the requirements of the tourism industry faced with the development of tourism? What policies/strategies should be pursued in this regard?

Based on the generic model, some of the hypotheses that will be tested and developed by using the system dynamics modelling approach:

- The current fast growth of the tourism industry may lead to a “tourism crisis” in certain locations. The research will concentrate on ways to minimise the chances of this happening.
- The advances of communication and organisational learning technology can play a vital role for promoting eco-tourism and social equality, thereafter leading people to mutual consensus for sustainable development.

Research Institute	Accountancy, Economics & Management Science Research Institute
Thesis Title	Modelling Tourism Development To Support Sustainability-Oriented Policy Making
Supervisor	Professor B.C. Dangerfield
School	School of Accountancy, Economics & Management Science

Johnston, Stuart

Management Issues For A Global Economy

According to the World Trade Organisation (1998) the process of globalisation may be the most powerful trend of our time. The term refers to a world in which societies, cultures, politics and economies have, in some sense, come closer together. For example, giant companies such as GE Corporation, Coca-Cola, Nike, Sony and Microsoft are producing and marketing their products throughout the world, while investors move their money around, using what Capra (2002) describes as “ The electronically operated global casino...” that seeks out maximum profits regardless of where it comes from.

While the media is quick to point out the new and cheap products we can now purchase, the effects of globalisation on working people, the environment and society are sometimes hidden. Globalisation is quickly changing the way we work, our costs and standards of living, the control we have over our food and environment, and just as importantly, how others live and work. For the UK Manufacturing Sector it is vitally important to understand this and to actively confront it in terms of its advantages and disadvantages.

For some it provides new opportunities for expansion and growth by taking advantage of international market possibilities. For the majority, however, growing economic globalisation is increasing the competition with foreign enterprises and it is an inward process that brings competitive challenges and threats. In order to survive in this environment the levels of risk versus opportunity need to be carefully balanced.

In light of these issues it is proposed to undertake an exploratory critical assessment looking at the effects that globalisation is having on the UK Manufacturing Sector.

It should be noted that according to the DTI (2000) that Manufacturing generates two-thirds of the value of UK exports, directly accounts for 4.3 million jobs and accounts for 20% of GDP.

Research Hypothesis

The nature of the research is exploratory and the issues that will be explored include:

“That globalisation will fundamentally alter the shape of the UK economy and will lead to the decline and eventual dissolution of the notion of a manufacturing sector.”

Research Institute	Management Research Institute
Thesis Title	Strategic Management – Globalisation And Its Effects On UK Manufacturing
Supervisor	Dr J Swift
School	School of Management

Liu, Xueyuan

The Evolution Of Manufacturing Techniques: A Demand-Driven Approach

The developmental history of manufacturing techniques (MTs) has actually been a demand-driven passage, and all MTs have been forged through a process that is responsive to the customers' demands at their times.

Craftsmanship, the earliest MT, produces what the customers like at a time when the technology is not well developed. As most people cannot afford crafted products, the demand in the market is static, small and specific.

With the social and economic development, especially during the industrial revolution in the 1700s in the UK, the market became global, competitive and there was a demand for large volumes of products at lower prices. Therefore, Mass Production (MP) was the natural outcome to meet these demands.

Now, further social and economic development makes the competition more intense and fierce, and encourages customers to choose quality with variety but at the same low prices. These demands lead to the Lean Manufacturing (LM), incorporating many techniques such as Total Quality Management (TQM), Just-In-Time (JIT), 5 Zero and 5S.

Most recently, with the globalization making the market ever larger and diversified, techniques such as Agile Manufacturing (AM), Mass Customization (MC), Flexible Manufacturing (FM), Smart Manufacturing (SM) and Computer Integrated Manufacturing (CIM) have been proposed to satisfy the diverse demands of customers.

It is believed that with the further global development, more new techniques will be adopted to face the ever-changing demands, while at the same time, all the existing techniques will need to remain to satisfy the diverse demands in the global marketplace.

Research Institute	Management Research Institute
Thesis Title	Agile Manufacturing In China
Supervisor	Dr. Ed. Doran
School	School of Management

Yang, Hui

Strategic Objectives, Parent Control And Performance: A Study Of Sino-European International Joint Ventures

The study concentrates on a particular form of international market entry into developing countries: international joint ventures (IJVs). Recent years have witnessed an increasing use of international joint ventures as an important strategic option by multinational corporations (MNCs) pursuing their international strategic objectives. A critical determinant of IJV performance appears to be the control exercised by parents over the venture's activities. The study explores 1) the strategic objectives of foreign firms entering joint ventures, 2) parent control, and 3) joint venture performance. A conceptual framework of these constructs is developed.

A variety of reasons have been suggested to explain foreign parent's motives for forming IJVs. The overall strategic objectives of IJV parent is the pooling of resources to create value in a way that each of the parents could not achieve by acting alone. From the parent firm's standpoint, an effective IJV control system is one which promotes the attainment of its strategic objectives for the venture. The theoretical framework suggests that different strategic objectives of foreign partners have different performance outcomes based upon their degrees of control. The study hence contributes to a better understanding of the three components that had not been systematically addressed previously. In addition, as the most important newly emerging market economy in the world, China seems the logical choice for the analytical context.

Research Institute	Management Research Institute
Thesis Title	Strategic Objectives, Parent Control And Performance: A Study Of Sino-European International Joint Ventures
Supervisor	Jeryl Whitelock
School	School of Management



University of Salford
Research and Graduate College

SPARC 2003 The Sessions

Group A3 14:00-16:00 Bronte Room

Nicola Goudge
(Institute for Health and Social Care Research)

Krishna Patel
(Institute for Health and Social Care Research)

Yongsheng Gao
(Institute for Health and Social Care Research)

Jackie Taylor
(Institute for Health and Social Care Research)

Brigitte Toro
(Institute for Health and Social Care Research)

Louise Anne Blinkhorn
(Institute for Health and Social Care Research)

Goudge, Nicola

The Theoretical Background Of Quality Of Life

Definition of Quality of life (QoL)

Individual perception of their position in life's context of culture & value systems in which they live & in relation to their goals, expectations, standards & concerns (WHO).

Identified the context of the research - focus of project

Stroke rehabilitation
team approach changes in QoL

Existing theory critiqued literature review

Health models (WHO, (1999):Wade, (1992) & Tate, et al (1996)
Health psychology influence
Illness wellness continuum (Antonovsky, 1990)
Maslow's,(1970: 1948) Alderfer's (1969)& Sirgy's (1986)hierarchies
Critique of needs

New theory proposed: result of critical appraisal

Based on needs theory, health models & illness wellness
places needs as a hierarchy influencing QoL
considers QoL as global & individual
subjective measure

Implications of new theory to patients

Patient needs reflect new theoretical hierarchy
patients involved with care (empowerment)
QoL influenced adversely by stroke
identifies their position on illness wellness continuum
Make treatment holistic
places patient at centre of care

Proposed theory operationalised: development of an outcome measure

Subjective measure
elicited by interview (prompts)
ask to nominate four areas
use areas to record change in QoL
use areas to guide treatment & record efficacy

Conclusion

Define Quality of life
identified the context of the research
existing theory critiqued
new theory proposed
implications of new theory to patients
proposed theory operationalised

Research Institute	Institute for Health and Social Care
Thesis Title	Stroke Patients Quality of Life
Supervisor	Andrew Long
School	School of Health Care Professionals

Patel, Krishna

Design Of Upper Limb Orthoses For Patients With Brachial Plexus Lesions

This abstract describes the work at the University of Salford addressing the limitations with current orthotic approaches for patients with Brachial Plexus Lesions. Upper limb orthoses are used in this patient group to supplant lost upper limb function completely, to assist or supplement lost upper limb motor power, or to supplement surgical reconstruction. Research shows that the most common causation of traumatic brachial plexus lesion is a result of road traffic accidents, especially motorcyclists, when the head and shoulder are separated due to impact collisions with the ground.

Anecdotal evidence suggests that patients are dissatisfied with the functional gain provided by current devices and therefore a design review is indicated. The work began with a literature review, focusing on evidence of the nature and extent of the problems with current orthoses. This is being followed by a design review, based on the use of an approach known as the House of Quality model. The House of Quality approach is used by designers to rank a set of user needs onto engineering requirements. This approach, although rather time consuming to perform, has already been applied with some success to the design of other rehabilitation aids, including a powered prosthetic hand.

Views on the requirements for upper limb orthotics are being gathered from both clinicians and patients and will be used to identify specific elements within current designs that can be improved. The data is being gathered using questionnaires sent to patients and clinicians around the UK. The work will form a basis for developing and evaluating improved upper limb orthotic devices.

Research Institute	Institute for Health and Social Care Research
Thesis Title	Advances In Upper Limb Orthoses For Patients With Brachial Plexus Lesions Including The Derivation Of An Engineering Specification For An Improved Orthotic Device
Supervisor	L Kenney
School	School of Health Care Professionals

Gao, Yongsheng

Flexible Sets Of Distinctions For Multiple Paradigms - A Means Of Constructing Ontologies

Ontologies are recognized as a key technology for knowledge sharing. A key task for health informatics is to model health care domain knowledge into ontologies. Within health care it is inevitable that we must deal with heterogeneous types and sources of knowledge, information and data. When incorporating multiple paradigms into ontologies we are faced not only with differences in underlying knowledge, but also with conflicts in the terminology used. In this presentation we identify the difficulties of modeling heterogeneous domain knowledge within a single ontology and explore ways of overcoming those difficulties. Within the presentation we will explore an ontology for a unified traditional Chinese medical language system which is being designed in China. Protege is being used both to construct the ontology and in knowledge acquisition. We will make comparisons with possible representations for Orthodox Western Medicine. Both Chinese Medicine and Orthodox Western Medicine deal with the human health condition. Much could be gained from effective knowledge sharing. However, despite superficial similarities in terminology, these two disciplines come from very different paradigms. Sowa recognised that no fixed collection of distinctions or categories is likely to be adequate for describing all things for all time, even under a single paradigm. We go further by arguing that different flexible sets of distinctions or categories are needed for modeling domain knowledge from different paradigms.

Research Institute	Institute for Health and Social Care Research
Thesis Title	Formal Representation Of Acupuncture; Concepts, Theory And Logic (FRACTAL)
Supervisor	Stephen Kay
School	School of Health Care Professionals

Taylor, Jackie

Exploring Occupational Careers And The Construction Of Identity: The Narratives Of Older Women.

The practice-based discipline of occupational therapy and its related academic discipline, occupational science, are associated with a range of theories which link engagement in everyday activities (occupations) with health and identity.(1) The interdisciplinary nature of occupational science enables perspectives from a range of biological and social sciences to contribute to an understanding of the occupational being.(2)

Several interesting factors have a bearing on the relationship between the occupations engaged in by the individual and the construction of identity. There is, for example, evidence that certain occupations might be more significant in relation to identity than others. Research also indicates a link between engagement in occupation and the reconstruction of the 'self' after loss or illness.

Narrative analysis offers a useful framework for the exploration of occupational career and identity in the light of recent theory developments.(3) Such an analysis, whilst following an interpretivist approach, must also give recognition to socio-political forces on occupational activity that are inherent in the cultural narratives which impact on the narratives of research participants. Narratives from a sample of older women, invited to talk about their life's interests, will be used as a source of data.

1. Wilcock A. Occupational science: the Key to Broadening Horizons. *British Journal of Occupational Therapy* 2001;64(8):412-417.
2. Yerxa EJ, Clark, F, Frank, G, Jackson, J, Parham, D, Pierce, D, Stein, C, Zemke, R. An Introduction to Occupational science, A Foundation for Occupational Therapy in the 21st Century. *Occupational Therapy in Health Care* 1989;6(1):1-17.
3. Braveman B, Helfrich, C. Occupational Identity: Exploring the Narratives of Three Men Living with AIDS. *Journal of Occupational Science* 2001;8(2):25-31.

Research Institute	Institute for Health and Social Care Research
Thesis Title	Personal Meanings Of Occupational Activities
Supervisor	Professor Stephen Kay
School	Health Care Professions

Toro, Brigitte

The Development And Testing Of The Salford Gait Assessment Tool

Introduction

Gait assessment by visual observation is a core skill for physiotherapists to evaluate abnormal gait. Observational gait assessment (OGA) tools from the published literature demonstrate poor validity, reliability and sensitivity to changes in gait. A recent survey revealed that 91.8% of physiotherapists wish for a new gait assessment tool. The purpose of the study is to develop an OGA tool, to calibrate the tool using 'gold standard' kinematic measurements and to validate its contents.

Method

We designed a new tool that measures leg joint movements in the sagittal plane. The tool was developed using focus groups to ensure its content and construct validity. Kinematic data of hip, knee and ankle movements were collected from 12 able-bodied children and 62 children with cerebral palsy in the university's gait laboratory. The kinematic data were compared to the grading system of the tool.

Results

The results are based on the able-bodied children. The agreement between the kinematic grades and the tool's grades was 77.6%. The tool's grades were calibrated to agree fully with the kinematic results.

Conclusions

The new Salford Gait Assessment Tool has been evaluated against kinematic data and adjusted for normal gait, which is the starting point for the assessment of abnormal gait. Further analysis will be carried out on the results of abnormal gait.

Research Institute	Institute for Health and Social Care Research
Thesis Title	The Development, Testing And Application Of The Salford Clinically Orientated Gait Assessment Tool (SCOGAT)
Supervisor	Chris Nester
School	School of Health Care Professionals

Blinkhorn, Louise Anne

Older Women's Lives: A Study Into The Lived Experience Of Older Women With MS

Historically women's bodies have been shaped and controlled through the discursive formations of medical authority. The discursive shift of medical authority from the belief that disease existed separate from the body to the modernist idea that disease arose from within and could be mapped through the human body, significantly changed medical practice (McNay, 1994). The doctors 'gaze' on the 'visible' body powerfully contributed to the increased surveillance of bodies and the social control of bodies (McNay, 1994). More specifically, women with Multiple Sclerosis have battled against ideas about women's bodies and sexuality, both of which are couched within the power of the biomedical model and the doctors 'gaze'. This thesis will explore the lived experience of older women with Multiple Sclerosis through the use of narrative and storytelling. The study will critically analyse the stories in terms of the discursive formations and practices of medical authority and the construction of female bodies.

Research Institute	Institute for Health and Social Care Research
Thesis Title	Older Women's Lives: A Study Into The Lived Experience Of Older Women With MS
Supervisor	Professor Steven Shardlow
School	School of Community, Health Sciences & Social Care



University of Salford
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SPARC 2003 The Sessions

Group B3 14:00-16:00 Pankhurst Room

Sansanee Niemprem
(Leisure, Hospitality & Food Management)

Joanne Taylor
(Leisure, Hospitality & Food Management)

Jerry Taylor
(Leisure, Hospitality & Food Management)

Russell Green
(Leisure, Hospitality & Food Management)

Jonathan Burns
(Leisure, Hospitality & Food Management)

Grant Cropper
(Leisure, Hospitality & Food Management)

Julie Havery
(Leisure, Hospitality & Food Management)

Kevin Kane
(Leisure, Hospitality & Food Management)

Niemprem, Sansanee

HACCP Implementation In Thai Food Industry.

Since HACCP (Hazard Analysis Critical Control Point) has been accepted as an International Food Safety Management system, many food import countries request Thai food exporters to have HACCP approval. To implement HACCP, however, many food manufacturers find some difficulties, especially SMEs. Thus, many food producers assume that HACCP consultant is a choice to help them implementing HACCP successfully.

This research aims to find out essential factors to help HACCP implementation easier for food manufacturers. The information from this research could be used as basis information for Government, manufacturers to accelerate HACCP implementation.

To get the basis information about HACCP, the questionnaire was sent to 175 food manufacturers with HACCP approval. The purposes are to get connection to those food factories and information of HACCP team, consultation, accreditation and their attitudes.

From the first survey, there are 24 responses with 21 factories interested in taking part of further research.

Thesis Title	The Acceleration Of HACCP Within Developing Countries.
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management

Taylor, Joanne

Using Narrative Interviews To Investigate A New Approach To HACCP

The following presentation details the predominant research methodology I am using to investigate a new approach to HACCP in catering. This methodology is a qualitative psychological approach using in-depth narrative interviews and analysis. It is to be used with 50 small independent restaurants, once before the introduction of the new approach and once again afterwards. In this way I hope to ascertain information on whether the new approach can achieve changes in attitude, knowledge or behaviour to food safety, and gain insights into how the approach can be improved and best utilised.

HACCP is a system of food safety management which over the last few decades has become an increasing part of national government and international strategy to reduce the prevalence of food borne disease. A new regulation to come into force in 2005/6 will require a documented system based on HACCP principles in all food premises across the UK. Yet the implementation of 'classical' HACCP has so far had many limitations, particularly in the small business sector and in ways that will be of particular salience to catering. A new approach that actually works for caterers is desperately needed, and it is with this methodology I believe the best insights and evaluation can be achieved.

Thesis Title	Using Narrative Interviews To Investigate A New Approach To HACCP
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management

Taylor, Jerry

The Application Of HACCP Principles In The Independent Sector Of The Catering Industry.

To evaluate the application of an appropriate food safety management model for the restaurant sector of the catering industry. Putting the intervention in context through an analysis of the industry, personnel, industry food safety position and current perceptions of food safety. Investigating relevant factors for successful implementation of a new food safety model. Identifying training needs to meet competence in food safety practices through the implementation of the model.

Thesis Title	The Application Of HACCP Principles To The Independent Restaurant Sector Of The Hotel And Catering Industry.
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management

Green, Russell

Dissemination Of HACCP Information To Small Businesses

The area of study is to be the dissemination and implementation of HACCP in catering establishments falling within the 'SME' definition

Working Title

The dissemination and implementation of a HACCP based system of food safety control within 'owner/managed restaurants employing, less than 50 staff (combined full and part time) and serving up to 1000 meals per week in a semi rural environment'

A study of occupational health and safety legislation in SMEs clearly shows that after 25 years there are still large gaps in the implementation of fundamental aspects of the Health and Safety at Work etc Act 1974.

My earlier work revealed that there are peculiarities unique to the SME sector which render the imposition of new working practices on such businesses liable to failure without a detailed knowledge of the way in which these firms operate and an appreciation of the strengths and weaknesses of their culture and their underlying priorities and agenda.

In 2001, the Government, through the FSA, proposed that HACCP should be implemented more widely in keeping with European legislation. Consequently it was apparent that since a substantial proportion of 'knife and fork' catering was within the SME sector it seemed likely that the programme would be dogged by similar problems to those encountered by the Health and Safety enforcement agencies in 1974.

Aim

To assess the likelihood of the success of initiatives, as perceived by the SMEs themselves, in order to prevent someone in 25 years time commencing a PhD entitled 'Why did HACCP failed in the SME sector?'

Thesis Title	Dissemination Of HACCP Information To Small Businesses
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management

Burns, Jonathan

Action Research In Food Safety Management

The aims of my research are as follows:

- * To develop and implement an innovative approach to food safety management within a large UK leisure and catering organisation,
- * To investigate and identify critical factors that may exist, that contribute to the success or failure of development and implementation of such a system.
- * To investigate how the results of this investigation may affect current approaches to this problem in the catering industry as a whole.

My presentation today will outline the progress that I have made towards achieving these aims, with a particular focus on the nature and validity of 'Action Research' within this context.

I will examine my reasons for choosing an Action Research approach and will illustrate with practical examples how this approach has influenced my fieldwork to date.

Thesis Title	HACCP Implementation Within A National Chain Of Food Outlets.
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management

Cropper, Grant

Learning Organisation In HACCP

The concept of the learning organisation is now established, yet there are not many organisations that claim to be learning organisations. This study investigates the extent to which catering businesses gaining recognition for implementing documented food safety quality systems (HACCP) have implemented Learning Organisation criteria. The findings suggest that learning organisation concepts are perceived as strategically important when attempting to implement in a successful manner quality systems such as HACCP.

Thesis Title	The HACCP Training/Learning Culture
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management

Havery, Julie

Benchmarking A Significant Role In Raising The Standards In NHS Catering Via The Use Of HACCP.

This study explores issues relating to the use of benchmarking in evaluating HACCP implementation in NHS trusts catering operations. A review of literature relating to the development of catering standards in NHS catering premises together with the evolution of benchmarking within catering organisations will be undertaken. Benchmarking may be used in response to the aims of improving standards, alternatively it could be used for defensive reasons (due to diligence) as well as striving for performance gains, to ensure that all catering units are working to the same standards and to provide management with a tool to demonstrate compliance with legislation and higher standards. It would also be used to gain consistency from enforcing authorities by being fed through their food liaison groups.

The project involves a case study of zonal NHS trust catering groups and the strategies adopted to improve and attain standards when implementing HACCP. The requirements within the controls assurance documentation in place already within the NHS covering all aspects of both clinical and non-clinical care will be benchmarked with regard to the 15 criteria in place for catering.

Benchmarking undertaken within the groups has revealed that confusion exist within NHS catering establishments when attempting to implement HACCP and the use of Benchmarking may assist in developing the successful implementation and standardisation of HACCP systems in NHA catering.

Thesis Title	HACCP Benchmarking In NHS Catering.
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management

Kane, Kevin

The Origin Of H.A.C.C.P.

The origins of H.A.C.C.P. as an artefact of the United States space-flight programme are well documented and are often mentioned in the literature. The 'real' story is less well known. It is interesting in itself as an account of the way scientific knowledge, political need and consumer demands fuse together into legislation. As such it is less a tale of clear-sighted technical or scientific advance, than of ad hoc and reactive responses to unexpected events.

As well as being interesting, the history of H.A.C.C.P. is important in that the problems that smaller businesses face when implementing H.A.C.C.P. are, to a degree, derived from this history. The implementation problems of SME's are the focus of this research and will form a background to this talk.

Thesis Title	The Managerial Hurdles To HACCP Implementation.
Supervisor	Professor Eunice Taylor
School	School of Leisure, Hospitality & Food Management



University of Salford
Research and Graduate College

SPARC 2003 The Sessions

Group C1 14:00-16:00 Gaskell Room

Bob Hayes
(European Studies Research Institute)

Mark Barnard
(European Studies Research Institute)

Patrizia Muscogiuri
(Institute for Social, Cultural & Policy Research)

Andrew Gold
(Information Systems Research Institute)

Hayes, Bob

‘A Strangely Ambivalent Attitude’ – Sound Archives As A Resource For Researching Asylums And Mental Hospitals In The First Half Of The Twentieth Century.

A major challenge (probably the major challenge) facing those researching the social history of twentieth century asylums and mental hospitals is the limited availability of the staple of historical research - documents. Substantial documentary records do survive, but are often inaccessible due to lengthy closure periods. Staff records are usually closed for a manageable thirty years. However the closure period for patient records is, understandably, one hundred years from the date of the last entry. Faced with this challenge the researcher must explore alternative sources to offset the paucity of accessible documentary evidence.

This paper will explore one such alternative: the oral testimony of staff, patients and others connected with asylums and mental hospitals, recorded by sound archives and research projects. What can historians glean from these testimonies about asylum and mental hospital life during the first half of the twentieth century? Through the use of examples the paper will assess the insights provided by sound archive testimony and consider issues of reliability and interpretation. Sound recordings supported by transcripts will accompany the paper.

Research Institute	European Studies Research Institute
Thesis Title	Work, Charity And Therapy: The Role Of Paid, Volunteer And Patient Labour In Shaping The Organisation Of Large Lancashire Mental Institutions, 1918-1948.
Supervisor	Professor Patricia L. Garside
School	School of English, Sociology, Politics and Contemporary History

Barnard, Mark James

German Citizenship - A Legacy Of Blood?

Formerly German citizenship was the only western country that adhered to and defended the principle of jus sanguinis in defining citizenship.

Yet in attempt to dispense with the cultural rationalism of the past, official current German universalism under the reigning SPD/FDP coalition aims at new horizons of inclusion by extending citizenship and dual nationality to long term-residents.

In an era where de-emphasising the national and cultural implications of citizenship have become important at the European level, popular reactions generated by the changes in citizenship legislation for immigrants is of particular interest. Germany for example is often perceived -from outside as well as officially - as one of the leading motors of European integration within the EU.

Evidence suggests however that for many Germans, citizenship is a problematic and emotive issue, as the controversies resulting from the recent amendments to modernise German citizenship in accordance with the more Western civic-territorial concept testify. Academics such as Professor Hailbronner - former legal advisor to Herr Kohl- claims for instance that German nationhood is not a political but an ethnic, linguistic and cultural one.

Despite official claims to the contrary, this paper argues that from significant quarters Deutschtum or Germanness is still defined and understood in terms of blood descent and language - an irreducible ethnocultural Volksgemeinschaft - in stark contrast to the current government's more civic-orientation of citizenship.

This paper highlights therefore the extent to which there are key dissonances between official and popular understandings of nationhood as expressed through citizenship.

Research Institute	European Studies Research Institute
Thesis Title	The Essence Of German National Identity Since Reunification.
Supervisor	Professor John Keiger & Professor Vera Tolz
School	School of Languages

Muscogiuri, Patrizia

Metaphors Of Navigation: Seafaring As Voyage Of Life, Cognition And Writing

Since antiquity, seafaring has been understood metaphorically as the human being's journey of life, his/her *navigatio vitae*. However, the figuration of the individual's life as a voyage into uncertainty and the unknown – which are usually conceived as a metaphoric sea – amidst danger and perils, and under constant threat of shipwreck, did often refer to whole societies or institutions. This is the case, for instance, of the well-known metaphor of the “ship of state”, which alluded to the political “life” of a city or nation.

Significantly, nonetheless, although both metaphors thrived in modernity, twentieth-century writers exploited, and increasingly reworked radically, further tenors of the ancient nautical tropes, namely their conception as metaphors for “knowledge” as well as for writing. This paper will investigate in particular the connection between navigation and cognition from Plato to the World Wide Web, trying to account for the deep significance of a favoured metaphor of the post-modern world.

Research Institute	Institute for Social, Cultural and Policy Research
Thesis Title	The Sign Of The Breaker: Shipwreck, Sea And Language In (Post)modernity.
Supervisor	Dr Andrew Cooper
School	School of English, Sociology, Politics & Contemporary History

Gold, Andrew

What's The Use Of Reusing Learning Resources?

I'm researching the enabling & constraining factors for University of Salford lecturers to develop reusable teaching & learning materials. The emphasis is on the social and organisational issues which either facilitate or act as barriers to this approach to course content development. Reuse will involve the identification and design of content, which could be shared by colleagues. More importantly, it involves the cultural aspects of changing Academic Practice, and embedding this innovation into common practice. Some lecturers may like the idea; others may be very sceptical.

Research Institute	Information Systems Research Institute
Thesis Title	Academic Practices And Attitudes Relevant To Lecturers Adopting A Reuse Strategy And Culture At The University Of Salford
Supervisor	Frances Bell
School	School of Sciences



University of Salford
Research and Graduate College

SPARC 2003 The Sessions

Group C2 10:00-12:00 Gaskell Room

Norafida Ithnin
(Information Systems Research Institute)

Othman Ibrahim
(Information Systems Research Institute)

Kuo-Cheng Wu
(Information Systems Research Institute)

Mohammed Alhazmi
(Research Institute for Advanced Engineering)

Edwin Mit
(Research Institute for Advanced Engineering)

Artemios Andreou
(Research Institute for Advanced Engineering)

Ithnin, Norafida

Collaboration Model In A Particular Electronic Government: Malaysian Electronic Government Case Study

There is no one size fits all strategy in implementing Electronic Government, but one of the elements of successful Electronic Government Initiative is collaboration. Furthermore, implementation of Electronic Government requires fundamentally changing how government works and how people view the ways in which government helps them. Governments will have to explore new relationships among government agencies as well as partnerships with the private sector especially to ensure quality and accessibility of Electronic Government. This case study is concerned with understanding how collaboration way in a particular Electronic Government for the successful implementation of Electronic Government Initiative and whether it is being implemented as originally planned, and that actual benefit are realised. An interpretive paradigm and qualitative approach has been applied for collecting rich data on the different issues influencing the collaboration process and understanding the collaboration model in the study. Data were gathered through interview and observation comprising a selection of two consultant appointed, five consortia/vendors and representative for government agencies in the implementation of Malaysia Electronic Government Initiative and complemented with an interpretive analysis of document introduced within the implementation of Malaysian Electronic Government which identified the conceptual of collaboration concept underpinned by the Malaysian Government. The data then analysed through cross analysis of the cases using the selected collaboration framework/model before conclude the final research finding, future research and recommendation. Thus, the study found that the collaboration model in this particular Electronic Government need to be improve and well promoted in order to achieve the successful implementation of research context.

Research Institute	Information Systems Research Institute
Thesis Title	Collaboration Model In A Particular Electronic Government: Malaysian Electronic Government Case Study
Supervisor	Trevor Wood-Harper
School	Information Systems Institute

Ibrahim, Othman

Information Systems Planning Approaches: A Malaysian Electronic Government Case Study

The aim of Malaysian Electronic Government is to reinvent itself to lead the country into the Information Age. Reinventing means to improve how the Malaysian Government operates internally as well as how it delivers services to the people. Technically, Malaysian Electronic Government will provide modern administration, which is becoming information-based, electronically connected, and globally interdependent. However, it is important to acknowledge that from the literatures, many countries are suffering of failure with their Electronic Government initiative. The development of Electronic Government is no matter of technology, but also cultural and social indeed. Therefore, the understanding of how and why the particular issues and factors are important to the success of Electronic Government Information Systems implementation. Indeed, IS planning needs to have appropriate approaches to understand and overcome the issues in the complex social systems that improve the effectiveness and quality of Electronic Government services. This research explores the implementations of Malaysian Electronic Government Pilot Projects through interpretive approach that provides in-depth analysis, and also gives an opportunity to understand the particular research context closely.

Research Institute	Information Systems Research Institute
Thesis Title	Information Systems Planning Approaches: A Malaysian Electronic Government Case Study
Supervisor	Trevor Wood-Harper
School	Information Systems Institute

Wu, Kuo-Cheng

A Computer-aided Collaborative Design Environment

This paper proposes a distributed collaborative and interactive freeform design modelling system, named FreeSculptor, which comprises constraint-based 2D sketching, advanced 3D modelling and the state-of-the-art devices. As a design paradigm, FreeSculptor allows different skilled designers such as sculptor and sketcher cooperatively complete a design digitally with their preferred intuitive interactive devices and suitable visualisations across geographically distant sites. This research aims to investigate new interaction metaphors in collaborative manner for promoting creativity during the design phase.

Research Institute	Information Systems Research Institute
Thesis Title	A Computer-aided Freeform Modelling Design Paradigm
Supervisor	Terrence Fernando
School	Information Systems Institute

Alhamzi, Mohammed

A Study Of Distributed Piezoelectric Actuators For Structural Vibration Control

In theoretical analysis of helicopter rotor blade vibration under induced strain actuation, the blades are usually represented as slender beams. The objectives of induced strain actuation include active aerodynamic shape control for vibration inhibition and noise reduction. This paper presents a non-linear theoretical vibration analysis of a long, straight, isotropic cantilever box beam excited by piezoelectric actuator patches. The governing equations are derived by using Newtonian method based on the summation of forces and moments acting on a differential box beam element. These equations are generalized by using a small deflection elastic formulation to obtain the forced vibration characteristics of the box beam. The formulation includes coupled shear bending and twisting moments. Numerical computation of the beam's vibratory response characteristics was obtained using a MATLAB coding of Galerkin's method. In this investigation three actuator patch locations on the box beam structure are used to study flapping, lagging and twisting mode excitation. The results indicate optimum actuator locations for excitation of the first two flapping and lagging modes of the beam structure. But the results obtained for twisting excitation appear to be inconclusive.

Research Institute	Research Institute for Advanced Engineering
Thesis Title	A Study Of Distributed Piezoelectric Actuators For Structural Vibration Control
Supervisor	Dr B. A. Sangolola
School	School of Aeronautical, Civil & Mechanical Engineering

Mit, Edwin

Translating Object To Formal Model

Formal methods well known used for specifying a complete, unambiguous and consistent requirement specification but it is difficult and expensive. Object-oriented approach gaining popularity since 1980s as a relatively easy and economic to use in developing software application but its lack of formal semantics to verify the completeness and consistency of software requirements

There are number of work and diverse approaches has been done to translate or to combine formal methods and object-oriented methods. Most work to formalize object model (static and dynamic models) are sort of transform object model specification into formal representation of the model. This on going research area still facing several limitations, there is no standard convention to follow to input data for object model and object model is inadequate for generating formal model specification.

Our work try to refine object specification to make it closer to formal specification and optimize the used of object model specification for generating formal specification language. We will deploy activity diagram of object dynamic model to define the body of operation of formal model. The models specification will be converted into common internal representation, which can be translated to object model or formal model. The new propose software tool will combines the benefits of object models and formal models.

Research Institute	Research Institute for Advanced Engineering
Thesis Title	Translating Object to Formal Model and Vice Versa
Supervisor	Dr. Farid Meziane
School	School of Sciences

Andreou, Artemios

Interface UMTS Release 6 And Circuit Switched (CS) Networks

The Universal Mobile Telecommunication Systems (UMTS) which, is part of the ITU's (International Telecommunication Union) International Mobile Telephone Standard 2000 (IMT-2000) vision of a global family of 3G mobile communications systems, has finally arrived. The early deployments of UMTS (UMTS Release 3 - 3GPP Rel.99) have already been launched in several countries including the United Kingdom. Today's mobile customers have already demonstrated a taste for "non-voice" and other new services. Users are able to access services through their 3G mobile handset such as web browsing, Multimedia Messaging Services and location base services. This paper addresses the interface issues between the UMTS Release 6 and the legacy Circuit Switched (CS) Networks with particular reference to the functions performed by the Media Gateway (MGW) and the Media Gateway Control Function (MGCF).

Research Institute	Research Institute for Advanced Engineering
Thesis Title	Interface UMTS Release 6 And Circuit Switched (CS) Networks
Supervisor	Professor Nigel Linge
School	School of Acoustics & Electronic Engineering



University of Salford
Research and Graduate College

SPARC 2003 The Sessions

Group C3 14:00-16:00 Gaskell Room

Yusuf Arayici
(Built and Human Environment Research Institute)

Larry Velasco
(Institute for Materials Research)

Erwin Amiruddin
(Institute for Materials Research)

Jialiang Yao
(Information Systems Research Institute)

Jenny Crowley
(Telford Institute of Environmental Systems)

David Hetherington
(Telford Institute of Environmental Systems)

Arayici, Yusuf

The DIVERCITY Requirements Capture Process

The subject of the user requirements in system development is regarded as an important factor in successful system development and delivery to the user whilst also being recognised as an engineering domain. Requirements engineers are responsible for capturing and modelling the requirements using techniques to produce the software specifications correctly and complete the development from a user-driven perspective in time, at low cost and to client satisfaction.

Collaborative working using innovative interactive systems in construction is becoming a reality as many activities are performed globally with actors located in various geographical locations. The concept of the Computer Integrated Construction (CIC) has been the subject of research for many years. However, the uptake of this technology has been very limited.

The subject of user requirements for CIC developments and the requirements issue is investigated from the perspectives of CIC. The latest completed CIC prototype, the DIVERCITY system, forms the basis of the research subject. DIVERCITY is a large EU funded project in the area of construction IT undertaken by a European consortium of researchers and practitioners from the construction industry. It is the acronym for Distributed Virtual Workspace for enhancing Communication within the Construction Industry and the prototype that presents the mechanism to smoothly and collaboratively conduct the construction projects from early briefing to the detailed design and even further by the end of the construction phase. To be precise, DIVERCITY aims to supply a shared virtual construction design and briefing environment that enables the construction industry to better undertake the client briefing and design review phases of a project.

The research aims to propose a user requirements framework or guideline to use in the development of CIC systems that will enable the developers to produce user-oriented and practical CIC systems in order to increase the uptake of integrated computer environments in the construction industry.

This paper presents an empirical approach of requirements capture process in Computer integrated construction systems, which are recognised as to be next generation IT systems for the construction industry.

Research Institute	Built and Human Environment Research Institute
Thesis Title	Requirements Engineering Process In CIC (Computer Integrated Construction) System Development
Supervisor	M Sarshar
School	School of Construction & Property Management

Velasco, Larry

Magneto-Optic Vortices

A study of optical vortices propagation under the influence of an external magnetic field in conservative and dissipative media is shown. The nonlinear Schrödinger equation is extended to take into account the magneto-optic behavior of the material hosting the vortices. A very interesting set of coupled nonlinear equations form a model for the Faraday configuration and it is argued that the Voigt configuration can be used in a wide asymmetric waveguide. Using computer simulations as the primary tool it is shown that many interesting control possibilities exist, including the creation of an edge dislocation, after seeding one polarisation with a vortex, in the near field. In addition to the above a study of vortices in dissipative media is presented using what is known as the cubic quintic complex Ginzburg Landau equation (CGLE). Here many strange phenomena occur and all of them will be illustrated with extensive and attractive simulations. Finally a detailed study of vortex collisions will be discussed.

Research Institute	Institute for Materials Research
Thesis Title	Magneto-Optic Effect In 2D And 3D optical beams
Supervisor	A. D. Boardman
School	School of Sciences

Amiruddin, Erwin

Magnetic and Structural Properties of Co/Sm Multilayer Films

Multilayer films of Co/Sm were grown by dc magnetron sputtering. In these multilayer films, the Co magnetic layer thickness was fixed at 4.2 nm. The thickness of the individual Sm spacer layer was varied from 1.2 nm to 7.5 nm. Their magnetic properties were studied by alternating gradient force magnetometry (AGFM) and vibrating sample magnetometry (VSM). These multilayer films showed a variety of magnetic characteristic, which were dependent on the thickness of the Sm spacer layer. These multilayer films show a reduction in saturation magnetization, M_s , with increasing Sm layer thickness. Low angle x-ray reflectivity (XRR) measurements were also made on these multilayers. The results show that the periodic nature of the samples was clearly observed for all samples. The structure of these multilayers was studied by high-resolution transmission electron microscope (HRTM). The results confirm both the bilayer spacing and the degree of roughness suggested by low the angle XRD data. We also present evidence of the interdiffusion of the Co and Sm layers through the hysteresis loop measurement, which correlates with both coercivity and low angle x-ray reflectivity measurements.

Research Institute	Institute for Materials Research
Thesis Title	Magnetic and Structural Properties of Co/Sm Multilayer Films
Supervisor	P J Grundy
School	School of Sciences

Yao, Jialiang

A GIS And Virtual Environments Based Collaborative Urban Planning System

This paper presents the design and development of an IT based urban planning support system, called U-Plan, which facilitates distributed collaborative urban design and the assessment of what-if scenarios within virtual environments. This system integrates Virtual Reality (VR) and GIS technologies for quick and efficient generation and evaluation of 3D urban layouts. It uses a distributed application and an advanced VR-based user interface to support interactive collaborative urban planning. This research also investigates the suitability of different advanced visualisation platforms to serve urban planning tasks for various urban decision-making and design prototyping purposes.

Research Institute	Information Systems Research Institute
Thesis Title	A GIS And Virtual Environments Based Collaborative Urban Planning System
Supervisor	Terrence Fernando
School	Information Systems Institute

Crowley, Jenny

Observations Of Urban Atmospheric Boundary Layer Sensible Heat Flux Using Doppler Lidar

With a rapidly increasing urban population, urban air pollution is a growing problem. In order to minimise the impact of such pollution and hence improve urban quality of life, a prerequisite for air pollution forecasters, town planners and engineers is the knowledge of urban wind flows, atmospheric stability and surface sensible heat flux. Direct observation of these variables in urban areas is rare, due to the difficulty in making such observations without causing undue disturbance to urban life and business. The Salford University Doppler lidar has been shown to be suitable for making such observations, with the capability of taking city-wide data from a single location.

Data collected in Salford, Greater Manchester during May 2002 has successfully been used to calculate sensible heat flux. The technique involves using the balance equation of the vertical velocity fluctuations for horizontally homogeneous turbulence. The value derived using the lidar compares favourably with values estimated using a model known as the local-scale urban meteorological parameterisation scheme (LUMPS) and with data collected in the North West region previously.

The potential of lidar measurements to verify urban sensible heat flux is discussed, outlining future work on spatial and temporal variation of sensible heat flux under varying weather conditions.

Research Institute	Telford Institute of Environmental Systems
Thesis Title	Observations Of Urban Atmospheric Boundary Layer Sensible Heat Flux Using Doppler Lidar
Supervisor	Professor C Collier
School	School of Environment & Life Sciences

Hetherington, David

The Scale-Independent Quantification Of Surface Roughness In Gravel-Bed Rivers Using Geostatistics And High-Resolution Digital Elevation Models (DEMs).

Surface roughness evaluation is fundamental in many sedimentological, particle transport and flow dynamics models and its estimation is vital to the processes of river engineering, flood forecasting and flow routing. The need to address significant inaccuracies in flood inundation forecasting resulting from inappropriate surface roughness estimation has been recognised by a major NERC-EPSRC-DEFRA-Environment Agency joint initiative. Fundamental to the problem is the inability to estimate and integrate roughness variation comprising grain, micro-topographic, form and vegetative elements across a number of spatial scales. A geostatistical approach to surface roughness analysis, using the semi-variogram, appreciates all potential scales and roughness types and thus could eliminate such problems helping to streamline and improve the accuracy of current flood forecasting and will enhance technological and scientific knowledge. This research has the potential to characterise heterogeneous roughness elements and to estimate a single roughness parameter utilisable in hydraulic simulations, given data of sufficient resolution across the whole floodplain. This requirement is now achievable through the use of a field-based three-dimensional REIGL Imaging Sensor LMS-Z360 laser scanner. This will be utilised to produce a high resolution DEM of the River Nent at Blagill, Northumberland, a site chosen due to previous work on geostatistics and channel and floodplain morphology and for its known diversity of roughness elements.

Research Institute	Telford Institute of Environmental Systems
Thesis Title	Scale Independent Roughness Quantification
Supervisor	Dr George Heritage
School	School of Environment & Life Sciences