ORAL SESSION ONE 2.30-3.30 pm

Chair: Vojtech Olle

Why should I tick those irritating boxes at the end of job and other application forms!?

Mary Jennings, Senior Member, London Metropolitan / Oxford University

For every job and course application these days in Britain, there's a form which asks you about your gender and ethnicity. (But not yet sexual orientation - and why not, if other attributes are being asked for, why not this too?) Why should you tick these boxes? Or why not? Some argue that 'no data, no problem, no policy' and therefore there will be no progress to address social disadvantage. Others say that these categories are so 19th century and that we need to move beyond binary gender categories and the legacy of British colonialism. My research examines and analyses the landscape in Britain in the 21st century, and its efforts (or not) to address social disadvantage in the light of the Equality Act 2010.

Moving the hands and feet impairs working memory for action related words

Zubaida Shebani, PhD student, MRC Cognition and Brain Sciences Unit

Language and action systems of the human brain are functionally interwoven. Speaking about actions and understanding action-related speech sparks the motor system of the human brain and, conversely, motor system activation has an influence on the comprehension of action words and sentences. Although previous research has shown that motor systems become active when we understand language, a major question still remains whether these motor system activations are necessary for processing action words. We here report that rhythmic movements of either the hands or the feet lead to a differential impairment of working memory for concordant arm- and leg-related action words, with hand/arm movements predominantly impairing working memory for words used to speak about arm actions and foot/leg movements primarily impairing leg-related word memory. This result demonstrates that body-part specific and meaning-related processing resources in specific cortical motor systems are shared between overt movements and working memory for action-related words, thus documenting a genuine motor locus of semantic meaning.

What’s the damage? Effects of climate change on cultural heritage

Jonathan Ashley-Smith, Senior Member, Consultant

The future outdoor environment can be modelled using the assumptions implicit in the various IPCC scenarios. Using building physics software the environments within historic houses that result from these external changes can be predicted. Damage functions are mathematical relationships that give quantitative predictions of how historic objects such as books, furniture and paintings will be affected by these future changes in indoor environment. Acting now to prevent damage involves a calculable cost, doing nothing may also involve a cost. This latter cost can only be calculated if it is possible to define damage to cultural heritage items in quantifiable terms. My task is to find relevant damage functions that can be used in decision support software to help stakeholders from politicians to property owners.
To challenge or not to challenge? Issues of conflict when conducting research on race and migration in English secondary schools

Emel Thomas, PhD student, Faculty of Education

This paper examines the experiences and challenges that researchers face when undertaking research that has ‘Race’ and ‘Migration’ as key foci. Drawing on Critical Race Theory (CRT), this paper seeks to highlight some of the extreme and covert dangers that researchers encounter when researching the perceptions of British minority ethnic youth and more recently migrated Eastern European youth. The paper explores the challenges that emerged from a qualitative study conducted in two English secondary schools with 30 participants (ages 13-16). I argue that diversity in race, migration and education require researchers to adopt flexible critical perspectives in response to contemporary transformations of race and racism.

ORAL SESSION TWO 4.00 -5.00 pm

Chair: Carol Barford

Next generation energy conversion technology

Tony Dye, Senior Member

My work is concerned with the development and commercialisation of novel energy conversion technology, protected by a suite of international patents which are owned by my Company, Epicam Ltd. At the core of the technology are paired intermeshing rotors which deliver compression or expansion of gases by displacement. Uniquely, the displacement cycle is completed in only 90 degrees of rotation of the lobed rotor. The gas charge is retained during the cycle by means of small clearances with controlled tolerances which obviate the need for any physical, mechanical or liquid seals and virtually eliminate mechanical friction. Compression or expansion of gases is thus delivered by these devices at conditions which approach closely to the thermodynamic ideal for any given volume change. Variable geometry is also readily incorporated to vary the swept volume of the charge by 4 or 5 to 1 in operation. A supercharger is currently being developed for downsizing petrol engines. This year we plan to downsize HGV truck and bus engines by 50%, superseding turbochargers and recovering exhaust heat using a novel expansion system. The first patent is about to be granted in Japan for my “ultimate engine”, a detonation energy converter concept for universal application.

Prostate cancer stem cells: it only takes one cell

Ajobe Baridi, PhD student, Department of Oncology

Prostate cancer is the second most common cause of male deaths in the Western world. When the aggressive cancers are treated, most of the cancer cells die. However, in many cases the cancer relapses due to a very small population of cancer initiating cells: the cancer stem cells. Compelling evidence suggests that these cells are insensitive to available therapies and therefore are able to escape and reproduce the complete tumour after therapy. To address this illusive suspect, we are characterizing the cellular make up of the human prostate gland by identifying the different cells and their subsets. From fully differentiated cells, i.e. non-proliferating cells, to stem cells that can give rise to all cells in the gland. If we are able to discriminate between all cell types and subsets, we would be able to understand what makes normal stem cells so unique and how to identify similar cells. The difference between normal stem cells and cancer stem cells is that normal stem cells can produce complete prostate glands, while cancer stem cells give rise to complete tumours. Once we can identify normal stem cells, we can use that knowledge to find cancer stem cells in prostate tumours from the clinic.
Caring for physics? Gender perspectives on primary school student teacher’s constitutions of identities as teachers of science

Anna Danielsson, Visiting Fellow, Faculty of Education

In my postdoc project I investigate how primary school student teachers constitute identities as teachers of science, from a gender perspective. In particular, the project focuses on how the student teachers handle the meeting between primary teaching, an occupation associated with women and femininity, and the discipline of physics, which is both dominated by men and associated with masculinity on a symbolical level. In order to explore how primary school student teachers ‘do gender’ in their constitution of teacher identities the project works from dual, but integrated, theoretical starting points. Firstly, the project is founded in a feminist post-structural understanding of gender as performative, something ‘done’ in a social context. Secondly, learning is, following situated learning theory, conceptualised as involving the constitution of an identity. The primary means of data collection is semi-structured interviews, with student teachers in Sweden and in the U.K. This presentation will focus on students' classed and gendered interpretations of (school) science and how these interpretations by some male teachers are used as a means to fit into a primary teacher role.