EMDoc Sustainability Conference

Thank you for registering to attend the upcoming EMDoc Sustainability Conference. We are pleased to present you with our programme below and to announce that our conference is recognised by the Regional Centre of Expertise on Education for Sustainable Development:

The programme below also outlines breaks, networking opportunities, and our poster sessions. If at any point during the two days, you are uncertain of where to go, please send an email to emdocnetwork@gmail.com.
9 September, 2020

9:15-9:30 → Digital and Tech 'Helpdesk' opens

9:30-9:40 → Welcome

9:40-10:00 → Networking Coffee Morning

10:00-10:15 → Break

- Before we get started with our first showcase, take a moment to stretch, refill your tea or coffee, and decide which showcase to visit!

10:15-12:30 → Showcase 1A and 1B

<table>
<thead>
<tr>
<th>Theme: Health, wellbeing and gender equality; Chair: MJ Brown</th>
<th>Theme: Life on Land and Below Water; Chair: Daniel Koomson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louise Burton (University of Derby)</td>
<td>Trang Dang (Nottingham Trent University)</td>
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<tr>
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<td>- “Environmental Humanities Rethinking Sustainability”</td>
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<tr>
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<td>Lauren Moore (Nottingham Trent University)</td>
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<tr>
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<td>- “The importance of sustainable use of marine genetic resources”</td>
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12:30-14:00 → Lunch and Poster Viewing Free Session
# 14:00-15:30 → Showcase 2A and 2B

<table>
<thead>
<tr>
<th>Theme: Sustaining our cities and communities; Chair: Yousif Al-Daffaie</th>
<th>Theme: Responsible consumption and zero hunger</th>
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</table>
| **Oluwaseun Adebola Onolaja** (Nottingham Trent University)  
- “Ensuring Rights To The City By Promoting The Interwoven Attributes Of Sustainability Found In A Sample Of Street Trading Activity In Lagos Metropolis, Nigeria” | **Eliot Jones** (University of Nottingham)  
- “Understanding consumer behaviour and food waste through digital innovation” |
| **Magdalena Read** (University of Lincoln)  
- “Small community groups’ decision-making processes and sustainability in rural England: - the case for Lincolnshire” | **Francesca Hodges** (University of Leicester)  
- “Using bacteriophages to reduce food waste” |
| **Nittalin Phunapai** (De Montfort University)  
- “Investigating the Potential for Integrating Social Performance indicators with Environmental and Economic Life Cycle Assessment for Sustainable Building Evaluation” | **Rebecca Colley** (University of Northampton)  
- “Plastics in Electrical and Electronic Wastes towards a more circular future” |
| **Marina Russo-Schtcherbakoff-Kodakoff** (University of Derby)  
- “Next - sustainable architecture: Human-centred design could help solve global issues and make humanity better” | **Shamsudeen Zailani Mohammed** (University of Nottingham)  
- “A sustainable approach to reduce postharvest losses and waste in Nigerian food supply chains” |
10 September, 2020

9:15-9:30 → Digital and Tech ‘Helpdesk’ opens
9:30-9:50 → Networking Coffee Morning
9:50-10:00 → Break
10:00-10:45 → 3 Minute Thesis Presentations

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Title</th>
<th>Institution</th>
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</thead>
<tbody>
<tr>
<td>Jane Hearst</td>
<td>Building and Measuring Value in Arts-for-Health Services</td>
<td>De Montfort University</td>
</tr>
<tr>
<td>MJ Brown</td>
<td>Moving is medicine: a 3D breast cancer model</td>
<td>University of Loughborough</td>
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<tr>
<td>Yousif Al-Daffaie</td>
<td>Caged Birds don’t Sing: The Buried Voice of Mosul.</td>
<td>Nottingham Trent University</td>
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<tr>
<td>Daniel Koomson</td>
<td>Vulnerability and Adaptive Capacity of Rural Coastal Fishing Communities to Climate and Environmental Change</td>
<td>University of Derby</td>
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<tr>
<td>Nicci Vella</td>
<td>Social work education and domestic violence and abuse</td>
<td>University of Northampton</td>
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<tr>
<td>Catherine Vasey</td>
<td>Investigating drug-loaded nanoparticles in the treatment of glioblastoma</td>
<td>University of Nottingham</td>
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<tr>
<td>Margherita Colucci</td>
<td>Climbing the family tree to solve a crime: genetic identification for forensic applications</td>
<td>University of Leicester</td>
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<tr>
<td>Emma Rogers</td>
<td>Investigating the lived experiences of student teachers’ as readers and the formation of a ‘reading teacher’ identity.</td>
<td>Bishop Grosseteste University</td>
</tr>
</tbody>
</table>

10:45-11:00 → Screen free break
11:00-12:00 → Poster and Networking Session
12:00-14:00 → Lunch Break and Poster Viewing
14:00-16:00 → Showcase 3-A and Showcase 3-B

<table>
<thead>
<tr>
<th>Theme: Reducing inequalities and quality education; Chair: Margherita Colucci</th>
<th>Theme: Strong institutions and decent work</th>
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<tbody>
<tr>
<td>Rajani Padmanabhan (University of Northampton)</td>
<td>Sally Ahmed (University of Loughborough)</td>
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<td>- “Pre-Vocational Program – A Step towards Quality Education”</td>
<td>- “The Relationship between Earnings Quality and Corporate Social Responsibility (CSR): European evidence”</td>
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<tr>
<td>Elizabeth Farrar (Bishop Grossteste University)</td>
<td>Jenni Hunt (University of Leicester)</td>
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<td>- “Difficult discussions? Trainee teachers’ descriptions and beliefs about poverty in primary schools.”</td>
<td>- “Telling our stories together”</td>
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<td>Merelina Houghton (Bishop Grossteste University)</td>
<td>Safia Bahas (University of Loughborough)</td>
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<td>- “The educative journey of children with Down Syndrome: a path to sustainable change”</td>
<td>- “Measuring passenger satisfaction as an output of airport operational performance – A UK perspective”</td>
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<td>Tania Arrieta Hernandez (University of Leicester)</td>
<td>Eisen Mathew (University of Derby)</td>
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<tr>
<td>Yogeshvaran Ramanathapura Nagarajan (De Montfort University)</td>
<td>Rachel Neal (De Montfort University)</td>
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<td>- “Digital Manufacturing of Affordable Prosthetic Limbs”</td>
<td>- “Material culture, object-based research and sustainability”</td>
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16:00-16:15 → Break

16:15-16:30 → Close and Award Ceremony
Appendix A: Abstracts from Showcases

Speakers from Showcase 1A: Health, Wellbeing and Gender Equality

Louise Burton – University of Derby (l.burton@derby.ac.uk)

From cataracts to cancer: do professionals have adequate knowledge for an informed consent discussion

New regulations mean that before a patient has a diagnostic imaging test, there must be an informed consent discussion regarding the risks and benefits of ionising radiation (IR). These risks can be broken down into two categories, one of which is called stochastic, which are linked to different pathologies from cataracts to an increased risk of cancer. These happen by chance, it means there is no ‘safe’ dose of radiation, hence why every examination must be clinically justified, meaning the benefits outweigh the potential risks. As there are currently over 3.6 billion diagnostic procedures done every year, any unnecessary examinations can have significant negative impact. In-fact it is estimated that up to 2% of future cancers will be as a result of medical radiation. It is therefore imperative that professionals have the knowledge to ensure that each medical exposure is justified. Advancing practice is something the NHS should be rightly proud of and non-medical referrers (nurses, radiographers, physiotherapists etc) are a prime example of this. Only two articles in the systematic review covered this group, and neither were undertaken in the UK. In keeping with the ‘Sustainability’ theme; this project has provided an exciting opportunity to research a new area in health care, creating opportunities to strengthen the bond between allied health professional colleagues and a chance to make a real difference in patient outcomes. There has already been involvement with patients, staff and other groups, including the Institute of Physics and Engineering in Medicine (IPEM). The potential real-world impact includes improving working environment and training, which in turn can reduce the number of unjustified requests, reducing the pathologies directly induced by medical radiation for future generations. This presentation will include discussion of the data collected for the first time.

Emma Clare – University of Derby (e.clare1@unimail.derby.ac.uk)

Sustainability and Wellbeing in End of Life Care: Developing Death Competency

End of life care is vital for sustainable, high quality healthcare provision and wellbeing. With a UK and global aging population and worldwide threats to health, such as the recent pandemic, end-of-life-care services are under increasing pressure. Without adaptation on an individual and service level, these pressures will result in a decline in the quality of end of life care that services are able to provide. Avoidance of conversations regarding death and dying by health workers in hospital settings has been identified as a significant barrier to provision of end-of-life care (Reid et al, 2013). This avoidance and distancing from dying patients has been theorised to be a coping strategy for health workers’ low levels of death competency. Death competency refers to “a range of human skills and capabilities in dealing with death, as well as our beliefs and attitudes about these capabilities” (Robbins, 1994). It has been argued that death competency development in healthcare professionals is an ethical issue due to the demonstrated negative effects of low death competency – burnout, compassion fatigue and poor-quality patient-practitioner communication (Chi Ho Chan et al, 2015). This presentation will explore the question ‘how can the development of death competency in healthcare professionals facilitate sustainability and wellbeing in end of life care?’.
Elizabeth Eveleigh – University of Nottingham

Vegans, Vegetarians, and Omnivores: How Does Dietary Choice Influence Iodine Intake? A Systematic Review

Vegan and vegetarian diets are becoming increasingly popular. In western societies, individuals may select these eating patterns to achieve dietary sustainability. However, dietary restriction may increase the risk of iodine deficiency. This systematic review aims to assess iodine intake and status in adults following a vegan or vegetarian diet in industrialised countries. A systematic review and quality assessment were conducted in the period May 2019-April 2020 according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Studies were identified in Ovid MEDLINE, Embase, Web of Science, PubMed, Scopus, and secondary sources. Fifteen articles met inclusion criteria. Participants included 127,094 adults (aged ≥ 18 years). Vegan groups presented the lowest median urinary iodine concentrations, followed by vegetarians, and did not achieve optimal status. The highest iodine intakes were recorded in female vegans (1448.0 ± 3879.0 µg day⁻¹) and the lowest in vegetarians (15.6 ± 21.0 µg day⁻¹). Omnivores recorded the greatest intake in 83% of studies. Seaweed contributed largely to diets of vegans with excessive iodine intake. Vegans appear to have increased risk of low iodine status, deficiency and inadequate intake compared with adults following less restrictive diets. Therefore, further monitoring of iodine status in industrialised countries and research into improving the iodine intake and status of adults selecting sustainable dietary patterns is required.

Elpida Vounzoulaki – University of Leicester (ev63@leicester.ac.uk)

Addressing health inequalities for diabetes prevention in women with gestational diabetes

**Background:** There are currently 463 million people in the world living with diabetes, with the majority of them having type 2 diabetes. Deprivation and low socioeconomic status are closely associated with an increased risk of type 2 diabetes, particularly among younger age groups. The main reasons for this are the high rates of obesity and physical inactivity in deprived areas, as well as the lack of equal access to healthcare which makes people less likely to attend screening for diabetes. Based on our previous research, women who had gestational diabetes are a particularly vulnerable group, being almost ten times more likely to develop type 2 diabetes than those with an uncomplicated pregnancy.

**Aim & Methods:** This research aims to estimate screening attendance for type 2 diabetes in women after gestational diabetes. We are using previously collected patient data from GP practices and hospitals across the United Kingdom (UK). By identifying risk factors for non-attendance, we can target education and interventions to improve attendance where it is most needed.

**Results:** We are looking at risk factors for screening non-attendance as a means to highlight inequalities, which can then be addressed. We will identify areas within the UK where diabetes screening after gestational diabetes is low, as well as the demographic, socioeconomic and health-related characteristics associated with regular and poor screening attendance, respectively. We will further explore different preventative interventions and propose strategies tailored to the needs of a diverse population.

**Conclusions:** As type 2 diabetes is largely preventable, there is an urgent need to improve screening and address health inequalities in high-risk groups, including women who have had gestational diabetes. Our findings will be actively disseminated among clinicians and policy makers to raise awareness and motivate them to work closely with local community groups to develop patient-centred strategies for diabetes prevention.
Mark Hayford Dwira – University of Nottingham

The Role of Men in the Prevention of Female Genital Mutilation/Cutting (FGM/C) among the Sudanese Population in Nottingham. A Small-Scale Qualitative Study

Background: Due to gender inequality in the campaign against cultural-related practises like FGM/C, there is a notion that the practise is considered a feminist agenda, and therefore, it is women's responsibility to champion the practise prevention. This ignores the roles that men can play in preventing FGM/C in practising communities in the UK. This research explored how men can use their roles as fathers, husbands, community leaders, and faith leaders to help prevent FGM/C among Sudanese immigrants in Nottingham.

Methods: Data used for this small-scale qualitative study was obtained using semi-structured interviews and focus group discussions with 11 men, and was thematically analysed. The research situated within a radical feminist theoretical context of The Silences Framework and Post-Feminist Theory.

Results: This research revealed that men's roles (as fathers, husbands, community leaders, and faith leaders) are deep-rooted and related to their dominance and decision-making power that could prevent the decision to circumcise daughters within the Sudanese community. Moreover, the study revealed that the involvement of men as principal educators could give them the forum to discuss the effects of FGM/C practise openly among themselves (young and old), particularly with those married to women with FGM/C from the Sudanese community. Finally, the study revealed that men's assumption of the whistle-blower role from each family might increase people's knowledge of UK FGM/C laws and to encourage reporting of suspected FGM/C cases among people from practising communities living in Nottingham. This could help protect girls and women at risk of experiencing FGM/C.

Conclusion: This study suggests that policymakers and stakeholders, such as the National Health Services (NHS), who have so far largely ignored the role of men in addressing FGM/C, need to prioritise men's inclusion in their policy planning of any prospective FGM/C-related interventions. Further research is required to understand how aspects of masculinity, which could be interpreted at one level to embody power and gender-authority assumptions, are mobilised in a constructive way to examine the roles men can play in preventing FGM/C in the UK.

Tymèle Deydier – University of Loughborough

Microparticles to Improve the Treatment of Cardiovascular Disease

For my research, I use oil-in-water emulsions in microfluidic devices to encapsulate drugs in biodegradable polymer microparticles. These particles will then be coated onto novel angioplasty balloons which are used to widen narrowed blood vessels in the treatment of cardiovascular disease (group of diseases related to the heart and blood vessels). The particle production is done in two steps. First, both the polymer and the drug are dissolved in an organic solvent (oil solution) and injected through a microfluidic channel where it is squeezed by an aqueous solution which produces oil-in-water droplets. These droplets are then collected and solidified into drug-polymer particles, which are later analysed.
Speakers from Showcase 1B: Life on Land and Below Water

Helle Bernstorf Hydeskov – Nottingham Trent University (helle.hydeskov@ntu.ac.uk)

Towards more sustainable hunting: Health effects of lead (Pb) in Scandinavian brown bears (Ursus arctos)

Lead (Pb) from spent ammunition left in the environment is a global One Health problem and is therefore of concern to humans, wildlife and ecosystems. Lead has been regulated in several products such as paint and gasoline due to its negative health effects, but consistent and effective regulation of its use in hunting ammunition is lacking. Fragments from lead-based expanding hunting bullets in gut piles and non-recovered carcasses is a source of environmental contamination and lead exposure, affecting particularly scavenging species. While lead poisoning in wild birds has been a recognised problem for at least 140 years, reports on environmental exposure and health effects in wild mammals are lacking. The brown bear (Ursus arctos) is both an apex predator and a scavenger and can act a sentinel for environmental contamination monitoring. Its omnivorius diet puts it at risks of lead exposure from soil consumed with roots or invertebrates, plants, and animals hunted or scavenged. Similar to people, the brown bear is therefore exposed to lead from fragmented hunting bullets. Scandinavian brown bears in hunting areas have concentrations of lead in their blood above levels that are considered toxic in humans according to both the European Food Safety Authority and Centers for Disease Control and Prevention (USA). This project aims to investigate lead exposure in brown bears and how lead might affects their health. This will be achieved by determining lead concentrations in blood from live-captured bears and in tissue samples from hunted bears, analysing haematological and biochemical parameters, and examining tissues for pathologies. Results from this project are expected to influence game managers and policymakers worldwide in regards to regulations on lead ammunition for more sustainable hunting in the future.

Lauren Moore – Nottingham Trent University (lauren.moore@ntu.ac.uk)

Why reducing the ecological effects of roads is an important path to sustainability

Approximately 65 million miles of road exist on Earth and are present in nearly every ecosystem on the planet. Everyday business, leisure and economic trade exist due to the accessibility provided by roads. Simultaneously, roads dramatically contribute to greenhouse gas emissions and heat retention, consequences that are central to issues on sustainability. However, these are only a fraction of the problem. Roads weaken the health of ecosystems on which humans and all other species depend on, affecting food security, livelihoods and quality of life. Notably, roads have a vast fragmentation and deforestation footprint, as well as open up access to 1) further wildlife hunting opportunities and 2) the emergence of zoonotic diseases. Roads dramatically reduce the quality of terrestrial and aquatic habitats by altering mineral and nutrient cycles, soil degradation and erosion. Furthermore, collisions with vehicles kill billions of animals worldwide annually, from bees and badgers to chimpanzees and tigers.

As road networks continue to expand worldwide, even in developed countries like the UK, it is imperative to fully understand and mitigate these impacts to achieve more sustainable living. I will present some initial PhD results on the impacts of roads on the viability of hedgehog populations in the UK. This includes population density estimates to identify the status of urban hedgehog populations and GPS data to identify how hedgehogs interact with roads. Moreover, I will present hedgehog road mortality parameters to explore whether roads are a significant contributor to the species’ rapid and ongoing decline. My PhD further investigates road mitigation options at the local scale and future spatial planning of urban areas at the larger scale. This research invokes the need for innovation and collaboration, and argues that roads play a larger role in sustainability than previously appreciated.
Environmental Humanities Rethinking Sustainability

The purpose of this paper is to investigate ways in which environmental humanities can rethink the concept of sustainability beyond a new and improved version of the status quo. The economic and socio-political systems of human societies have long been built upon the anthropocentric mindset that grants humans sovereignty over the planet and its resources and upon the Law of Noncontradiction that constructs rigid dichotomies such as nature-culture, mind-body, and subject-object. Current practices and theories of sustainability are not an exception. To illuminate their pitfalls as a way of contextualising the abovementioned investigation, this paper examines these practices and theories in environmental business and green technology sectors and in contemporary creative and cultural writing of environmental humanities respectively. Regarding the latter, it focuses particularly on the growing scholarly attention to the new materialisms, including critical posthumanism and speculative feminism, and on contemporary climate fiction, such as the MaddAddam trilogy (2013) by Margaret Atwood. To then carry out the investigation, this paper draws on the twenty-first-century object-oriented turn, whose emphasis on the intrinsic uncanniness of humans and nonhumans, both animate and inanimate, allows for a complete deconstruction of anthropocentrism and the Law of Noncontradiction which have underpinned many projects of sustainability. This paper concludes that, in order to rethink the concept of sustainability, environmental humanities needs to acknowledge that the future coexistence of humans and nonhumans and solutions to the current climate crisis require an ecological polity that is different in kind, not degree, and a radical acceptance that contradictions are perfectly logical.

The importance of sustainable use of marine genetic resources

In the light of the global pandemic, pharmaceutical companies are desperately looking for a vaccine for COVID-19. Marine genetic resources (i.e. DNA or RNA of marine organisms) are one of the potential sources of novel medications including vaccines. Although much of oceans worldwide are still unexplored, it is evident that marine biodiversity in oceans is extremely rich. According to some studies it is more likely to derive valuable genetic material to develop medications from marine species than terrestrial species. Given the potential of marine genetic resources (MGRs) in developing medications combined with a fact that only small portion of oceans has been explored it is of paramount importance to use MGRs wisely and to ensure that future generations have access to them.

There is also a growing interest among states in MGRs, which can be depicted by the ongoing negotiations on an international legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under auspices of the 1982 United Nations Convention on the Law of the Sea. While this future legal instrument has a potential to ensure intergenerational equity, the concept of sustainable use remains unclear. This paper proposes to look into the meaning of the concept of sustainable use and to examine its potential and limitations in the context of utilisation of MGRs. In doing so, it demonstrates the difficulties in providing clarity of the concept of sustainable use drawing on the meanings of other related concepts e.g. sustainable development or sustainable management.

A polymer supported iron catalyst to degrade pollutants in wastewater - a radical solution

Introduction: As we become more technologically advanced, pollution from agriculture, manufacturing industries and hospitals are finding their way into water systems. Ultimately, these stable pollutants are impacting the health of the environment and humans. Some pollutants, due to their toxicity and complexity are difficult to remove using traditional wastewater treatments. Iron catalysts used alongside hydrogen peroxide can provide an efficient solution. However, due to these catalysts being utilised in their salt form, secondary pollution and sludge can occur. An iron catalyst has therefore been synthesised which is supported on a polymer support so that it can limit sludge
production and be reused several times. **Methodology**: Polyacrylonitrile polymer is chemically modified to produce new functional (binding) groups at high pH and temperature. After new functional groups are introduced, these are used to bind chemically to iron to produce chelates. The metal is now chemically bonded to the polymer. **Results**: The catalyst has been demonstrated to be effective in the degradation of reactive orange 16 dye, a potentially carcinogenic dye used in the textile industry. It was found that 99.6% of the dye was decolourised within 2 hours as well as 88.7% of the aromatic ring in the dye structure. The catalyst was also re-used four times with only a 6.2% loss in activity. The amount of secondary pollution from loose iron was less than 0.1 mg/L per cycle. **Conclusions**: The catalyst has been shown to work well in degrading harmful pollutants in wastewater. It also can be used more than once which makes it an attractive option to be used on an industrial scale. As the amount of iron lost from the catalyst per cycle is very low, the amount of secondary pollution will also be limited. This research aligns with UN Sustainability Goal 6: Clean Water and Sanitation.

**Speakers from Showcase 2A: Sustaining our Cities and Communities**

Oluwaseun Adebola Onolaja – Nottingham Trent University

Ensuring Rights To The City By Promoting The Interwoven Attributes Of Sustainability Found In A Sample Of Street Trading Activity In Lagos Metropolis, Nigeria

This study seeks to promote the interwoven attributes of sustainability, resulting from the experience of everyday life of a sample of street trading activity in the urban public space in Ojodu Berger motor park area, a prime location in the mainland of Lagos metropolis, Nigeria. The study is situated in urban sociology and adopts cultural anthropology, which includes the ‘production of social space’ and the conceptual spatial triad (Henri Lefebvre, 1974; 1991, et al), as its theoretical and philosophical background. Based on this, the study obtains its findings from ethnographic tools of observation and interview. The findings show that the interwoven attributes of sustainability include: informality, flexibility, vernacular, synergy, marketing strategy, spatial adaptability, behavioural disposition, social interaction, wealth creation and distribution, poverty alleviation, identity, collaboration, social welfare and well being, enterprise and initiative, freedom of expression, cultural expression, customer appeal. Given the broad definition of sustainability, as “meeting the needs of the present without compromising the ability of future generations to meet their own needs”, this study considers these attributes as contributing significantly, to the longevity and global presence of street trading activities. However, this study recognizes the current controversy regarding the rights to the city, emerging from the contested nature of the urban public space, as posing a significant barrier to enhancing the benefits found in the interwoven attributes of sustainability found these street trading activities. Therefore, the study concludes by recommending an inclusive framework in order to accommodate alternative meaning, use and interpretation of the urban public space, for informal activities such as street trading. This recommendation aligns with the provisions found in the sustainable development goals 10: Reduced Inequalities, and 11: Sustainable Cities and Communities, respectively.

Magdalena Read – University of Lincoln (18690694@students.lincoln.ac.uk)

Small community groups’ decision-making processes and sustainability in rural England: - the case for Lincolnshire

Small community groups play a pivotal role in society and have long been considered critical components of the processes of community change particularly in the development of rural community. Yet their value and contributions are often overlooked due to their non-existence on the register of regulatory bodies and lack of access to mainstream media due to their informality. Small community groups are branded as ‘grassroots’ (Ramirez-Andreotta, 2019; Dururu et al, 2015; Middlemiss, 2008; Flanagan and Hancock, 2010) ‘below or under the radar’ (Pillimore et. al, 2010; McCabe and Pillimore, 2012; GVAGrimley, 2010); ‘volunteer-based’ (McCabe and Pillimore, 2012; Dururu et al, 2015) or ‘unregulated’ (Adirondack, 2006). They do not have formal structures and have very little or no income. Nonetheless, small community groups are more resilient and likely to survive in times of austerity (Davidson and Packman, 2012). This research centres on small community groups as little is known about their
operation and, in particular, the nature of their decision-making process. It dips into the proverbial meaning of ‘small community groups’ and how they compare with the wider voluntary and community organisation (VCSO). It draws attention to some aspects of leadership theory to investigate mechanisms for improving the decision-making and strategy-making processes to enhance the work of small community groups and their sustainability. Using a multiple domain approach such as ‘leader-member exchange’ (LMX) could help unveil the right leadership approach for this group. This investigation will use interpretivist research, a framework in social research that uses humanistic qualitative approach (Saunders, Lewis and Thornhill, 2019). This is vital in gaining in-depth insights into the individual respondent’s meaning and motives and utilising first-hand experience and knowledge by the researcher of the community sector’s capacity development, to analyse data.

Nittalin Phunapai – De Montfort University
Investigating the Potential for Integrating Social Performance indicators with Environmental and Economic Life Cycle Assessment for Sustainable Building Evaluation

In order to design sustainable buildings, all three dimensions, (Environment, Economic and Social) normally need to be considered to evaluate the impacts of buildings throughout their life cycle. One of the popular tools for sustainable building evaluation is Life Cycle Sustainability Assessment (LCSA). This consists of three main parts which are Environmental Cycle Assessment (ELCA), Life Cycle Costing (LCC) and Social Life Cycle Assessment (SLCA). Although several cases focusing on optimisation in the environment and economy have been studied previously, relatively few studies include the social dimension of sustainable buildings to date. Although tool development for SLCA optimisation has attracted some attention from researchers and a number of assessment tools have been developed; there is a lack of a holistic view of social sustainability for buildings.

The aim of the presentation presented in this paper is to investigate how the potential of social impact assessment can be integrated effectively with the environment and the cost aspects. An existing tool, Building User Study (BUS), together with a further custom-designed data collection, is used to evaluate the social aspects of non-domestic buildings in order to evaluate techniques for integrating their social, economic and environmental impact assessments. The barriers for social optimisation will be mentioned in this paper as well as a methodology to prioritise the list of social indicators based on ISO standard, European Standard, BUS indicators as well as building utilisation through a case study of new Higher Education building, the Centre for Excellence in Sustainable Engineering (CESE), Srinakharinwirot University, Thailand. Consequently, the presentation proposes a framework of social aspects to consider in the design of more sustainable non-domestic buildings in Thailand. Moreover, the anticipated results will provide a better understanding of the current ELCA, LCC and SLCA tools available and their obstacles for integration using multiple objective optimisation algorithms. Finally, all data and results are seen to have enhanced case study models in Designbuilder in order to evaluate the framework developed to enhance sustainability in building evaluation.

Marina Russo – University of Derby (m.russo@derby.ac.uk)
Next - sustainable architecture: Human-centered design could help solve global issues and make humanity better
What if people were happier thanks to the design of their homes and cities? What if we could help with resilience and post-trauma recovery during reconstruction (post war/hazards)? What if we could improve the human condition worldwide, public health, economy, and reduce global pollution just by reshaping the way aesthetic decisions about buildings and cities are made? The subjectivity of the aesthetic decisions that authorities and professionals make in design and planning makes our built environment harmful to people and the world. The aim of the research is to explore how architectural aesthetics could become objective, based on science rather than subjective criteria. Different paths will be explored to find a way, perhaps a method, to enrich architectural design through aesthetic choices that are made objective. People spend on average
87% of their time in or around buildings[1] and their impact on human health, cognitive functions, behaviour and well-being is scientifically proven. It is therefore time to look for a way to include these criteria in the building design process, as well as in government regulations and requirements. Most architects and planners do not know how people will react psychologically, physiologically and cognitively to their designs. Given the growing enthusiasm for neuroscience and, more generally, for a new human-centered architectural framework, as well as the continuing scientific discoveries, it seems crucial to provide the field of architecture and urban planning with relevant data and new perspectives for the sake of people.

Speakers from Showcase 2B: Responsible Consumption and Zero Hunger

Eliot Jones – University of Nottingham (Eliot.Jones@nottingham.ac.uk)
Understanding consumer behaviour and food waste through digital innovation

Globally, nearly one third of food produced for human consumption is lost or wasted, equalling a total of 1.3 billion tonnes of food per year. This is a large, unnecessary burden for the environment and the economy. Research and development, both quantitative and qualitative, has delivered a wealth of information regarding the primary drivers for and against food waste, however, their recommendations largely involve consumer incentives at the front end. This does not engage the consumer with a sense of responsibility for their own waste and ignores many of their socially embedded, context specific practices. While recycling schemes across the UK have made consumers more responsible for their packaging waste, it cannot be said that the same exists for food waste. Drawing from insights gained in computer science, this study explores the potential for incorporating novel technology probe methodologies to measure and deter food waste. Internet of Things (IoT) devices are becoming increasingly prevalent in nudging behavioural change and self-monitoring. Their effects have most clearly been felt in the fitness industry, where smart watches have revolutionised the way anyone from professional athletes to weight watchers train and interact with their bodies. There is an absence of existing research into and operational digital technologies for food waste reduction in the home. It has been shown that motivations to repurpose unused food are based in altruism above any other factor. As such, it appears that the coercive nature of an IoT device may be necessary in order to instigate lasting change or to uncover embedded social causes. We conclude this paper with some reflections on our own pilot technology probe, the smart bin, and how this has revealed understandings of waste across social groups and insights into the participatory design of an IoT food waste device.

Francesca Hodges - University of Leicester (fs185@leicester.ac.uk)
Using bacteriophages to reduce food waste

The Food and Agriculture Organization of the United Nations estimates that globally, one third of edible food produced for human consumption each year is wasted. A staggering 20% of all meat produced globally is wasted, which is equivalent to 75 million cows being produced just to be discarded. In many cases, though more notably in economically developed countries, food that deviates from these standards is discarded or rejected by the consumer, even before its ‘use by’ date. Fresh meat products fall prey to extreme scrutiny by consumers demonstrated by complaints data provided by one of the UK’s leading meat producers for vacuum-packed (VP) pork shoulder joints sold between 2016 and 2019 which indicates that 73% of complaints are 'off-related'. This means that almost three quarters of complaints arise as a result of consumers experiencing colour changes and off-odours when they open a product. Bacteriophages (phages) offer a promising solution to spoilage of food by microbes. They have been shown to be effective food additives that limit the growth of specific bacteria and they have Generally Recognized as Safe status from the Food and Drug Administration. This research looks to address this problem by designing a phage-based smart packaging incorporating a phage cocktail that targets the most prevalent odour-producing bacteria found on the surface of VP pork meat to reduce the incidence of microbial spoilage and maintain the sensory appeal of the meat to consumers. Food security is the second of
seventeen sustainable development goals adopted by the UN. A major reduction in food waste is essential for the progression of nations across the globe to become resource efficient and the successful application of phages in this way could contribute to the reduction of food waste.

Rebecca Colley - University of Northampton
Plastics in Electrical and Electronic Wastes towards a more circular future
Electrical and electronic equipment contains a complex mix of metals, plastics and critical raw materials. Circular economy business models offer the opportunity to manage these materials more effectively. Adoption of a more circular approach can enhance resource management and material flows within global supply chains. Dematerialisation, harvesting of valuable components, materials and closed loop systems provide economic, social and environmental benefits to both industry and communities. This presentation summarises the research to date of the researcher examining the opportunities and challenges in working towards this vision and shows examples of current best practice. Through researching actors in the value chain, this research looks at the feasibility of a circular model for the plastics supply and value chain. The data was derived from a series of semi-structured interviews, questionnaires and literature reviews. At a European level, the treatment of more than 3 million tonnes of electronic waste by takeback schemes could make more than 717 000 tons of plastic available. With an estimated 9 million tonnes of electronic waste generated in Europe, a further 2 million tons of plastic could be made available for recycling. A number of technical and cost-related barriers need to be addressed before circular economy business models are more widely adopted by the sector.

Shamsudeen Zailani Mohammed - University of Nottingham
A sustainable approach to reduce postharvest losses and waste in Nigerian food supply chains
This research focuses on food loss and waste after the farm gate, also known as ‘postharvest losses’ (PHL), in Nigeria. The study explores the journey of a tomato from farm to consumers with the objective of gaining better understanding of the underlying dynamics that influence PHL from the perspective of the main actors. Research has indicated that farms lose as much as 50% of their produce due to pests and diseases, lack of processing facilities and improper postharvest handling. The magnitude and causes of PHL vary by crop and geographical regions. One potential solution is to encourage sustainable intensification: that is, to improve the productivity and environmental outcomes of food production. Sustainable intensification normally refers to the ‘farm’ part of the food supply chain; however, given the extent of PHL, particularly in countries such as Nigeria, there is great potential to sustainably intensify by improving the flow of food supplies from farmers to consumers. Building on the “follow the thing” approach used by Ian Cook, the research conducted here addresses waste through the tomato supply chain. In particular, we attempt to quantify losses that occur at different stages of the supply chain. To do this, a survey was conducted in the three district areas of Kaduna state, Nigeria; 64 farmers, 27 intermediaries, 47 traders and 38 consumers participated in the survey in early 2020. Results from the farmers’ survey will be used in the conference to identify which districts generate the most waste and what regions are doing differently to reduce waste. Finally, we consider approaches and interventions with potential to reduce PHL and waste in Nigerian food supply chains more generally.
Speakers from Showcase 3A: Reducing Inequalities and Quality Education

Rajani Padmanabhan – University of Northampton

Pre-Vocational Program – A Step Towards Quality Education

In India completion of Class X is a minimum requirement for admission to higher education courses. Some Children with Special Educational Needs (CWSEN) have challenges completing Class X. This curtails their chances for academic development and employment options. What then is Quality Education? How do we reduce these inequalities? – two important aspects of the UN-Sustainable Development Goals (SDG). A well-designed prevocational-program is one solution to bridge this gap, prevent exclusion and move towards employment and economic growth, which is another SDG.

Points for presentation: Relevance and need for prevocational-programs in mainstream education; Essential elements of a prevocational curriculum; Need for certification by a recognized board of education; Challenges faced in implementing a prevocational-program; Establishing minimum-learning-levels for vocational-programs.

Context: Brindavan Education Trust, where I work, is an academic centre for CWSEN. Owing to the increase in the number of children who were unable to complete Class X, a prevocational-program was started in 2019. The focus is on functional academics, life skills and socio-emotional-learning. A review of literature including the curriculum published by government boards of education, and discussions with organizations running prevocational-programs did not reveal the presence of an appropriate curriculum in India. The curriculum developed by Brindavan is based on student profiles, our experience and awareness of essential skills for success in adulthood. Some challenges faced were lack of positive self-esteem and self-perception by parents and students due to insistence by employers and higher education courses on a minimum qualification of Class X. Lack of certification for the program presents challenges in terms of further vocational courses leading directly to employment and internships in the employment sector. This led to a feeling of marginalization and exclusion for students and parents. There is a need to promote advocacy and establish minimum-levels-learning for entry into vocational courses.

Elizabeth Farrar – Bishop Grossteste University (elizabeth.farrar@bishopg.ac.uk)

Difficult discussions? Trainee teachers’ descriptions and beliefs about poverty in primary schools.

This doctoral research project explores trainee teachers’ beliefs about poverty, and its impact on the pupils they teach. Economically disadvantaged children have the poorest educational outcomes, whilst the number of children in England affected by poverty has risen over the last 5 years (JRF, 2020). Data has been gathered through focus group activities constructed to illuminate PGCE trainees’ beliefs. Photographs were used to facilitate discussion about this potentially sensitive topic (Banks, 2007; White & Murray, 2016). Three snapshot focus groups were followed by a longitudinal study during the 2019 – 2020 course. Initial findings suggest shifts in trainees’ perceptions as they become inducted into the profession and their teacher identity develops. Findings so far indicate that despite all participants believing they had experienced issues relating to poverty during their school placements, they lacked awareness about issues of social justice, including the impact of poverty on children’s language. This may lead to deficit views of children living in poverty, resulting in detrimental effects on their future pupils’ educational outcomes. Negative stereotypes can perpetuate inequality, with labelling and low expectations potentially arising from deficit viewpoints (Gorski, 2012; Thompson, 2017; Thompson, McNicholl & Menter, 2016). In each focus group the discussion has turned to social class which, alongside identity theory, has led to the incorporation of Bourdieus’ theories of capital, field and habitus into the conceptual framework for the thesis. Existing research suggests that teachers with a deeper understanding of their attitudes towards poverty and social justice issues are better placed
to make a difference to the learning of disadvantaged pupils. The aim of this project is to prompt a discussion about how ITE facilitates trainees' understanding of their own opinions and beliefs, and whether it challenges deficit ideologies where necessary.

Merelina Houghton – Bishop Grosseteste University (merelina.houghton@bishopg.ac.uk)
The educative journey of children with Down Syndrome: a path to sustainable change.
The paper reports on a pilot study investigating parental perspectives of the educative journey of children with Down Syndrome (DS). The project asks: What do the educational journeys of learners with DS have to teach us as education professionals? The aim is to explore how knowledge and experience of parents of children with DS can inform training for education professionals. Parents of children with DS often have knowledge about effective educational provision for their children, which is ‘frequently not matched by practitioners’ in educational settings (*APPGDS, 2012). Misconceptions and low expectations can result in inappropriate educational provision. The vital role played by effective partnership with parents is a recurrent theme in studies on parental perspectives. Furthermore, legislation and policy in England state that parents' views should be central to the processes, leading to the appropriate provision. The current pilot further develops the theoretical framework of an earlier pilot, which drew on funds of knowledge theory and the concept of local understanding. The study takes a narrative approach, based on fundamental principles of life-history research. Unstructured interviews were conducted with three parents of young people with DS (aged 7, 12 and 19). Transcripts are being coded following a six-phase model of thematic analysis. Early coding suggests that staff attitude and parent proactivity are key factors impacting the educational experience of these children. Research into the attitudes and beliefs of staff regarding inclusion and disability would suggest that social and educational context may influence beliefs and attitudes which in turn perpetuate systems. This would suggest that inclusive legislation, policy and guidance are not alone sufficient. In order to break what can be a self-perpetuating cycle and achieve sustainable and positive change in the educational provision for children with DS, we need to challenge the underlying beliefs and values which drive some current practice. An evolving conceptual framework draws these strands together to suggest a starting-point for sustainable change.


Tania Arrieta Hernandez – University of Leicester (tah32@leicester.ac.uk)
Austerity and its impact on the sustainability of the public sector: An analytic narrative approach
The aim of this paper is to examine the impact of the austerity policies on the sustainability of the public sector in the UK. In particular this paper examines the sustainability of the NHS. The analysis has been conducted through an analytic narrative approach. Analytic narratives are narratives within a framework. They combine analytic tools that are commonly employed in economics and political science with the narrative form. The analysis shows that spending reductions in the public sector between 2010-11 and 2019-20 negatively impacted on the sustainability of the health sector. The impact on the sector’s sustainability is reflected in the deterioration of the financial position of some NHS bodies (e.g., commissioners and trusts). It is also reflected on the reliance NHS bodies have had on temporary and unstable sources of funding to address demand (e.g., debt and emergency funds). These funding sources may support the NHS to release spending pressures in the short-term, but they may add to its financial strain in the longer-term (e.g., through for example interests on debt). The analysis also covers the risks associated with the budgetary constraints in the NHS. Examples of these risks are the deterioration of some performance measures due to shortages in resources (e.g., rises in the waiting times in emergency services), and the positive correlation between the financial performance of NHS bodies and the quality of the service these organisations provide. Understanding the sustainability of the health sector is important because an unsustainable health sector can negatively affect groups dependent on the provision of the service such as the older population.

Key words: sustainability, public sector, health sector, spending reductions and risks.
Yogeshvaran Ramanathapura Nagarajan – De Montfort University
Digital Manufacturing of Affordable Prosthetic Limbs

It is estimated that more than 1 million peoples are undergoing amputations globally in a year and 80% of the peoples are living in Low-Middle Income Countries (LMIC)[1]. The World Health Organisation (WHO) action plan for 2014-2021 is to strengthen and extend rehabilitation, assistive devices to fulfil the aspiration of disabled peoples in all aspects of life. The prosthetic socket is the primary interface between the amputee’s limb and an artificial leg. The demand for the accessible prosthetic socket is increasing in LMICs due to rise of trauma and diabetic-related amputation. Several technological challenges are yet to be addressed to produce a good custom fit socket. The hindrance arises from the manual limb measurement which ends inaccurate due to asymmetric limb shape, manufacturing method and material of the socket. My research focusses on the digital technique to trace the residual limb and develop a cost-effective, innovative solution to manufacture prosthetic socket. In this talk, I will describe the outcome of my fieldwork with the world largest NGO working on the rehabilitating the amputees. This will include their fabrication process and unmet need of the amputees in the developing country. I will also highlight the effectiveness of the 3D scanning which was deployed to measure the 3D geometry of the residuum limb. Following on is the use of a machine-learning algorithm to understand the quality of the prosthetic socket by comparing the modified and unmodified cast of the residuum limb. Finally, I will present the digital Manufacturing employed to utilise Recycled polymers for fabricating custom-fit prosthetic socket. This talk will summarise preliminary research with by co-working with prosthetic NGO’s and analysing the recycled material to meet the needs of the amputees – addressing the UN’s Sustainable Development goals related to the Health and wellbeing of people.


Speakers from Showcase 3B: Strong Institutions and Decent Work
Sally Ahmed – University of Loughborough

The Relationship between Earnings Quality and Corporate Social Responsibility (CSR): European evidence

Purpose – While there is considerable evidence about the relationship between CSR and earnings quality (EQ), the results obtained are inconsistent, making it relatively challenging to draw a definitive conclusion. This study aims to examine the relationship between CSR and EQ in the European context. In particular, whether CSR-oriented firms are motivated by ethical motives or they use CSR to cover up their opportunistic behaviours or as green-washing.

Design/methodology/approach – The initial sample consists of the all listed firms in 26 European countries during the period of 2001 to 2018. CSR performance will be measured using the Thomson Reuters (ASSET4) database, while CSR disclosure through the Bloomberg database.

Originality/value – This study contributes to the literature of CSR in many ways. First, it investigates the relationship between CSR and EQ in the European context. Using single-country samples in previous studies might lead to an uncertainty of the external validity of the findings. Using a sample of European countries with a larger geographical area counterbalances country-specific factors and, therefore, provides solid evidence. Moreover, adding regulatory and institutional factors on the main model will make it possible to investigate the impact of those factors on the association between EQ and CSR. Second, as EQ is a multidimensional concept and there is no agreed-upon proxy for EQ, the researcher will measure EQ using three different proxies including accounting and market-based proxies. This methodology avoids the applicability and validity critiques of using one proxy, i.e., accruals quality. Finally, CSR practices cover CSR performance and CSR disclosure. While, most of the previous studies that
examine the relationship between CSR and EQ have used only one component of CSR practices with the majority of them focusing on CSR performance. This research examines how CSR disclosure moderates the CSR performance-EQ relationship.

Jenni Hunt – University of Leicester (jh713@leicester.ac.uk)
Telling our Stories Together
The Sustainable Development Goals adopted by the General Assembly aim to leave no one behind, challenging inequalities that have existed across societies. I aim to examine how museums have worked with disabled groups to share their stories, and in doing so empower disabled individuals and the museum, whilst also combatting negative stereotypes around disability and difference. My talk will involve an explanation of the work museums have done around social justice and disability, and highlight two cases of collaborative work and what was achieved through this.

Safia Bahas – University of Loughborough
Measuring Passenger Satisfaction as an Output of Airport Operational Performance – A UK Perspective
Since the deregulation of commercial aviation, airports have transformed from being basic service providers to being publicly or privately operated businesses that value operational efficiency and financial gains while continuing to provide the service. This has resulted in both the industry and academia researching on airport operational efficiencies and developing tools for measurement. Meanwhile, the concept of service quality and passenger satisfaction has gained importance over the years as airport competition increased. Currently, there are fewer studies that view passenger satisfaction as one of the outputs of airport performance. Hence this study will be computing operational efficiencies for airports while considering the service quality impact of airports as an output and will investigate the factors that determine this satisfaction-based operational efficiency of airports. This is carried out by a two-stage analysis. The first stage analyses the overall satisfaction ratings of UK airports as an output to measure the airport efficiency in the years 2017 and 2018 using the method of data envelopment analysis (DEA). The results of this will be employed in a second stage regression analysis to identify the significant factors that contribute to become an airport with quality and efficiency. The factors that will be tested includes airport ownership, airport size, hub status and traffic mix. The results of this study will give airport managers a method for incorporating passenger satisfaction data collected into the wider decision-making process for the airport.*

*This is an ongoing research, the results of which will be available for presentation in September.

Eisen Mathew – University of Derby (e.pattarethumathew@derby.ac.uk)
The environmental strategy, environmental performance and environmental impact of Small and Medium sized Enterprises (SMEs): an empirical study of transition towards a low carbon economy
The United Kingdom is one of the first countries to recognise and act on the social, economic and security threats of climate change. The Climate Change Act (2008) through ‘Carbon Budgets’ has laid significant pathways and strategies for carbon reduction (Legislation.gov.uk, 2020). The Climate Change act along with the Clean Growth Strategy (2017) and Climate Change Committees report (2019) aim to accomplish the net zero target emissions by 2050, indicates the firm commitment of the government by legislation to achieve the targets (Legislation.gov.uk, 2020). The Small Medium Enterprises (SMEs) are dominant form of business organisation that plays an important role in a country’s economic growth. In the UK, there were 5.7 million SMEs in 2018, which was over 99% of all businesses. As the world looks to shift to clean, resilient and sustainable economic growth, there is an opportunity for SMEs in supporting the shift as the SMEs contribute to a major market share and economic turnover. The study
aims to analyse the relationship that exists between Environmental Strategies (ES), Environmental Performance (EP) and Environmental Impact (EI) as the relationship is pivotal in understanding the role of SMEs in the transition towards a low carbon economy. The study sample comprises 15 numbers of pro-environmental SMEs that are based in D2N2 (Derby Derbyshire Nottingham, Nottinghamshire) Local Enterprise Partnership. The case study organisations are identified using purposive sampling (Eriksson and Kovalainen, 2008). The novelty of research is based upon the fact that there is lack of research has in the field of exploring the relationship between Environmental strategy, Environmental performance and Environmental impact in SMEs. The research will define prospective for public engagement within Policymakers, Regulatory bodies, Business community and broader public. This research will contribute in the given field for future implementation and to address the environmental pillar of sustainability.

References

Rachel Neal – De Montfort University
Material Culture, Object-based Research and Sustainability
The preservation of surviving material culture objects in archival and museum collections provides invaluable material connections for historical research, however, tactile based studies involving object handling and exposure to light can significantly contribute to their degradation which can endanger their already fragile condition. Archive closures due to the COVID 19 Pandemic has also highlighted the issue of exclusivity in accessibility of object collections and the challenges faced by object-based methodologies. The closures have impacted upon my research in which I use an object-based approach to historical dress study as a way to make a tactile connection to the lived experience of dress. Shifting my research to online resources has consequently revealed the limitations in online archival research and gaps in accessible digital content. This paper aims to extend the boundaries of sustainability discourses and consider its meaning in the context of historical research of material culture and the capacity of objects to educate. This paper draws from UN Sustainability Goals 4, 9 and 12 by recognizing the current gaps in online content of archival material culture collections, the need for long term preservation whilst expanding the reach of archival collections to be more inclusive and facilitate remote access to resources. The paper begins by exploring examples of surviving garments to demonstrate their significance to material culture, social and design history studies along with design practice methodologies by drawing from my earlier experience as a designer. The paper will then engage with sustainability discourses to explore the issues around collections and archives, considering online content and how digitisation can help ameliorate the narratives recorded and look at the ways in which archives can meet the need of today’s researchers through inclusivity and innovation without comprising future research and the material resources from which to learn about historical narratives of consumption.
Appendix B: Abstracts from Posters

Allan Njanji – Nottingham Trent University (allan.njanji2015@my.ntu.ac.uk)
I Have A Voice Too! Re-documenting Refugee Narratives

I Have A Voice Too! focuses on the image of a refugee, a figure that is deeply contested and highly polarising, with increased negativity and little representational agency. Through stigmatisation, refugees and asylum seekers have often been scapegoats in mainstream media and politicians’ rhetoric based on hate and xenophobia brandished as nationalism (Berry, Garcia-Blanco and Moore, 2016). With the number of people fleeing war, persecution and conflict exceeding 70 million in 2018 (UNHCR, 2019), and the unabated dehumanization and vilification of refugees and asylum seekers in most receiving nations, there has never been a more urgent need to re-document refugee narratives and stem the tide on inequality and social injustice. This initiative serves two of the United Nations Sustainable Development Goals that promote just, peaceful and inclusive societies whilst reducing inequality within and amongst countries. Meeting the needs of the present refugees and asylum seekers by granting them agency and platforms not only helps them counter media narratives as they provide alternative voices, but this will in turn make acceptance of future generations of refugees easier by host communities and societies at large. This research focuses on the now, harnessing on the creative potential of documentary filmmaking practices and audio production, with scholarly enquiry, thereby contributing to cultural and media discourse on the visual representation of refugees and asylum seekers. The methodology of data collection and analysis is practice led through interviews and focus groups with refugees and asylum seekers in UK, and with critical analysis of documentary films and media articles on refugees. This research provides a unique opportunity as it aims to encourage and empower refugees and asylum seekers to take a lead on narratives about their own lives through self-representation, so as to counter the toxic and hostile environment they face in the UK.

Amna Anwar – Nottingham Trent University (amna.anwar2016@my.ntu.ac.uk)
Moving Towards Sustainable Cities Based on Real-Time Crowd Monitoring and Visualisation

Cities are becoming smarter and more sustainable, allowing communities to embrace technology and its uses to advance knowledge, experiences, and safety of the people who live in them. The recent improvements in urbanised technology aligns closely with a decrease in the number of “highstreet shoppers” due to the accessibility of shopping online. Cities are therefore required to investigate methods of making experiences more sustainable whilst continually attracting visitors to improve the local economy and shopping experience. Stakeholders are looking to understand the flow of people to ensure local infrastructure is being used sustainably and effectively. However current approaches are insubstantial due to limited research and the scarcity of footfall data. The current approach to these problems isn’t sufficient to meet the needs and therefore a new approach of tacking variate sets of footfall data is required. Simultaneously, there is also a need of being able to record the flow of the crowd using a more computational method of collecting footfall.

This project utilises a new approach for collection and display of footfall data within cities. Current work focuses on producing a ubiquitous framework of analysing and visualising footfall and crowdedness data. Crowd counting technologies are often employed by local city councils and are used in monitoring directions of movement. However, this approach uses mesh camera networks, which are often fixed to a specific location and struggle when counting large crowds of people or transforming to new environments. Due to the advancement in smartphones and their wireless connectivity more granular data can be collected and used with the proposed longitudinal footfall management system, to study and analyse people movement and crowd flow dynamics.
Alina Bychkova – Nottingham Trent University (alina.bychkova2019@my.ntu.ac.uk)

Understanding climate change narratives in Central Asia: science, politics and media discussions

The study looks at the discourses of climate change in the three Central Asian countries: Kazakhstan, Kyrgyzstan, Uzbekistan. The region contributes comparatively little to global climate (0.55% global GHG), yet it is highly predisposed to the effects of climate change. The issue has serious impacts on local and regional economies, especially on key regional industries that are agriculture and energy (Reyer 2017). Central Asia has experienced environmental degradation under the industry-oriented leadership of the Soviet Union. After the failure of the Soviet regime, the states have failed to establish effective climate policies (World Bank 2018). Recently, progress is being made throughout the region. The in-depth understanding of how the issue is presented on the multiple arenas such as politics, media and science is essential for advancing climate policies and strengthening human agency (Carvalho 2010). Although climate change has a physical nature, science, politics, and media set out public perceptions of the issue. However, these spheres influence each other and tend to articulate different and sometimes controversial ideas (Weingart 2000). In the case of Central Asia, media coverage is shaped by political control and characterised by limited public expression (Rollberg 2015). As a result, the idea of climate change is at risk to be distorted.

The study argues that the idea of climate change is politically defined and ideologically constrained in Central Asian countries. The discourse analysis of climate discussion across science, politics and media will reveal who and how shapes climate discussion in the region. The three case studies will benefit to national climate dialogues and, synthetized, will throw light to the regional situation. Facilitating the dialog between scientists, media workers and policymakers as well as between the states is an essential step towards effective climate policies (Central Asia Expert Working Group 2018).

Dinish Nadaraja – Nottingham Trent University

Towards a Sustainable Future: Abaca Plantation Agriculture

Introduction: Abaca is a tropical plant that is native to the Philippines. It is the source of the biodegradable fibre that is internationally known as Manila hemp. With the growing interest in biodegradable products, there is an increasing demand for this fibre particularly in the manufacturing of specialty papers such tea bags and currency notes. Unfortunately, many plantation systems including the Abaca plantation system are often associated with a variety of environmental and social issues from deforestation to slave and child labour. Objective: This research was conducted to develop a simple, user-friendly and socio-politically legitimate toolkit for Abaca plantation agriculture. Methodology: A participatory action research (PAR) methodology was utilized to incorporate the input of different stakeholders in order to develop sustainability indicators which can address the diversity of sustainability concerns of different stakeholders. Key Results: A total of 26 stakeholder groups were identified encompassing four main sectors namely, government organizations, business organizations, local community and NGOs. A total of 103 sustainability indicators were identified from three sources namely; semi-structured interviews with key stakeholders, systematic review of peer-reviewed and grey literature and document review of Indonesian documents. A total of 33 sustainability indicators were then selected by the identified stakeholders using Delphi questionnaires. Conclusion: Preliminary analysis indicated that most of the stakeholders were more interested in environmental indicators and least interested in the economic indicators. Further work will involve testing the toolkit (sustainability indicators) on the Abaca plantation with the stakeholders to determine the practical applicability of the indicators in assessing the sustainability of the plantation. A workshop will then be held at the end of the project to collect feedback from the stakeholders regarding the sustainability assessment toolkit and PAR process.
Ademuyiwa Agbonyin – University of Derby
Towards a sustainable business model: Implementing Circular Economy practices in building retrofits through lessons learned from the manufacturing sector.

The ever-rising buildings construction and operation sector accounted for 36% of global final energy use, and 39% of energy-related CO2 emissions in 2017. Materials production for buildings is a major contributor of GHG emissions, and the main source of emissions across a building’s lifecycle. The Paris agreement on climate change has set the objective to keep global temperature rise to below 2°C, and to achieve these targets, several sectors will need to contribute significant emission reductions. Academic and industry experts have established that of utmost importance however, is ensuring buildings are kept in use rather than disposing of/demolishing them. The Ellen MacArthur Foundation defines the circular economy (CE) as an economy that is “restorative or regenerative in design and aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles”. CE experiments have been carried out by several industry researchers and governments of the world: example is the Netherlands government who have an agenda to develop a circular economy aimed at reducing use of new material by 50% by the year 2050. A similar circular approach could potentially help the UK’s built sector reduce impacts, avoid rising costs and consequences of volatile markets. With this approach, new uses for materials removed from retrofitted buildings can be devised. This research sets the pace for a near-future economy where resource depletion and legislation could significantly change the commercial market for building materials. With the aim of contributing to this research streams, this paper presents a notable progressive step towards the development of new avenues for research in a UK context through development of a credible decision-making framework.

Brett Martin – University of Derby (Brett.Martin11@outlook.com)
Using the Palaeontology of the Maltese Archipelago to Understand the Implications of Modern Climate Change

Modern climate change threatens the integrity and productivity of marine ecosystems across the planet. One of the most advocated ways of predicting the path and effects of modern climate change is through the use of a geological analogue. The Maltese Archipelago, consisting of accumulated marine sediments, is of Upper Oligocene to Upper Miocene age capturing the Mi-1 cooling event, Mid-Miocene Climatic Optimum and Mid-Miocene Climatic Transition. A comprehensive account of microfossil and macrofossil biostratigraphy will be made using an extensive random sampling method, robust statistical testing and the completion of a Maltese Palaeontological Handbook. For the first time, absolute dating of Maltese limestones using LA-ICP-MS U-Pb chronology attempts to accurately correlate palaeontological changes to known climatic events. Palaeoenvironment reconstruction includes the palaeogeography of the Central Mediterranean through the Late Oligocene and Miocene epochs as well as carbonate ramp spatial change analysis due to sea level change. Events of phosphogenesis closely associated with ocean acidification and benthic hypoxia are prominent in the stratigraphy and are also consulted as a potential effect of climate change. With observable drastic changes in marine palaeofauna following palaeotemperature closely, implications for the effects of modern climate change can be discussed in relation to ecosystem integrity and habitat change. This will give us the information necessary to adapt in order to save our marine ecosystems and increase the sustainability and longevity of our Earth.

Jean-Marc Fabre – University of Derby
Planning and Forecasting methodologies in the world of E-com from its beginning till now including the pandemic COVID-19

E-Commerce is the new face of commerce. Enactment of e-Commerce within organizations is increasing by numbers continuously. Nonetheless, as organizations grow over time, e-Commerce becomes more multifaceted and challenging. This is mainly due to organizations penetrations of e-Commerce as part of their compelled costs rather than an opportunity for growth. The Internet began to rise in reputation among the common society in 1994; it took roughly four years to strengthen the security protocols like,
HTTP, and DSL which permitted rapid access and a resolute connection to the Internet. In 2000, a prominent figure of business organizations in the United States and Western Europe rendered their services in the World Wide Web. People started to determine the term e-commerce as the means of purchasing of accessible goods and services over the Internet using reliable connections and electronic payment assistance. Over time, organizations forget to recognize the shift in the management structure that may be expected due to e-Commerce implementation as they do not usually include any e-Commerce strategy that would allow them for active e-Commerce implementation. As the world is trying to fight against the pandemic, the e-commerce industry is facing an imbalance in coping up with the demands of the consumers for groceries and other essentials. The COVID-19 outbreak is rapidly accelerating the transition of the market to digital e-commerce. Due to the social distancing, household depends on the online stores for home deliveries of the daily essential items and it is likely to continue the same even after the quarantine period is over. Rakuten intelligence posited that online order volume from e-commerce merchants has increased by 210.1% between 12th March to 15th March. While people are home bound and cannot pursue external entertainment options, there is an increase in digital streaming services. 22.5% of the companies are seeing their subscription growth accelerate, 12.8% of companies are seeing slow growth, but still growing and remaining 11.4% of the companies have started to see subscribe churn out of their subscriber acquisition rates. According to the analysis done by the United Nations Department of Economic and Social Affairs (DESA), conveyed that the COVID-19 pandemic is disrupting global supply chains and international trade. With nearly 100 countries closing national borders during the past month, the movement of people and tourism flows have come to a screeching halt. The analysis also noted that before the outbreak of the COVID-19, world yield was expected to expand at a satisfactory pace of 2.5% in 2020, as it was reported in the World Economic Situation and Prospects 2020. With this, it’s invariably necessary to study the occurring and recurring nature of the systems and ideas that significantly stand as the framework for an effective e-commerce platform implementation.

Bowen Shang – University of Derby (b.shang@derby.ac.uk)

Are department stores a sustainable retailing institution on the future high street? A ZMET customer-based retailer brand equity study

Under the current turbulent retail environment, the department stores, who used to be the destination of the high streets, are declining and facing enormous challenges. One of the key issues is that the multi-department one-stop shopping experience is no longer unique to the department stores because the boundaries between different retail institutions has been blurred increasingly by providing similar commodity offerings. However, no effective framework has been developed to rescue the department store from its declining trajectory. Moreover, customers’ perception of department store has been affecting by the changing retail environment, in particular by the online shopping platforms. Through the brand equity framework, customers’ emotional attachment to the department stores can be measured. Customer-based retailer equity (CBRE) frameworks are mainly constituted of conceptualised studies with a scarce application of empirical data and the subject area is under-researched with no study targeting within the department store category. From a CBRE framework, this study aims to understand the reasons behind the decline of department stores on the high street from customers’ perspectives. Data will be collected from 24 UK high street department store shoppers using Zaltman Metaphor Elimination Technique (ZMET). Each participant will be requested to provide 6 to 8 images reflecting their thoughts and feelings of their chosen department store. The participants will return after a week for a ZMET-structured interview to help the researcher understand their image choice comprehensively. This study will contribute to the depth deficit that could hardly be achieved using other qualitative research methods. Results of this dissertation will provide new insights into the relationship between high street department stores and their consumers under today’s turbulent time. The framework developed will improve high street department stores’ practitioners’ understanding of their consumers; and thus, to reconceptualise the department store that customers want for the future high street.
Beth Wood – University of Derby

Engaging Post-Millennials: the impact of new digital ecosystems on the next generation’s news values

It is a common misconception that post-millennials are not interested in the news. Despite data demonstrating a lack of engagement from the under thirties with regards to TV and print journalism, this does not signify that they are not accessing the information by other means. As the demands upon technology increase, news outlets are forced to consider innovative ways to capture the attention of audiences. A large proportion of the population admit to accessing news via social media; coupled with this, the instantaneity of social media has led to audiences being informed about a broader range of topics than they had previous. However, the audiences’ overall attitude to receiving material through this outlet is yet to be explored in-depth. Post-millennials are considered to be more studious and educated regarding the internet and day to day life in general, indeed, many are familiar with the term clickbait and organisations’ need for shares. Despite the general consensus by many journalists of being above the influence of advertisers, it is acknowledged that business imperatives are in many cases urging journalists and editors to neglect the institutional values of journalism thus damaging reputations. This paper is largely based on social shaping of technology theories to achieve an understanding of how post-millennials are using technology and how technology is being altered in response. In addition, through the use of two focus groups and 600 questionnaires, this research explores how post-millennials engage with the news they have access to and the value they place on the information they receive enabling the formulation of new journalistic gatekeeping.

Jorge Luis Aguilar-Santana – University of Nottingham

Novel Thin-film Photovoltaic Vacuum Glazing

Evacuated glass technologies are a novel solution to provide comfort and energy efficiency to buildings by the reduction of heat transfer through glazing (conduction and convection), achieving an internal layer of vacuum (<0.5 Pa) that limits the net amount and movement of air particles within its middle gap. This solution provides a relatively thin sample (7 mm) when compared to traditional Argon/Krypton double glass windows which can have bulky configurations (>15 mm) providing limitless application for the retrofitting of historical buildings which are often restrained by the frame encasing. Overall, this window is 41.6% more insulated thanks to the use of Indium–based low-temperature edge sealing and highly-compressible aerogel pillars. Novel food industry concepts have included the use of vacuum glass in greenhouses and as building envelope insulator and energy producer.

Afsaneh Khoshkerdar – University of Nottingham

The impact of paternal diet on late gestation fetal growth and placental gene expression

Placental function and blood flow are central regulators of fetal growth and are controlled by numerous pathways including the renin-angiotensin system (RAS), apoptosis and 1-Carbon metabolism. There is now growing evidence linking paternal diet with impaired fetal growth and adult offspring cardio-metabolic ill-health. However, the underlying mechanisms linking paternal diet and fetal development are poorly defined. The aim of this study was to address the impact of paternal diet on fetal growth and the placental expression of multiple renin-angiotensin system (RAS), 1-Carbon metabolism pathway genes, known to be involved in placental blood flow and fetal growth. Histological placental changes through Periodic Acid Schiff (PAS) staining was assessed in this study as well. Male C57/BL6J mice were fed one of five diets; low protein (LPD(9% casein,24% sugar, 10% fat), western diet (19% casein, 21%fat, 34% sugar)), diets supplemented with methyl-donors (MD-LPD and MD-WD) or an isocaloric control diet (18% casein, 10% fat, 21%sugar) for at least 8 weeks). Males were mated with virgin 8-12-week-old females C57BL/6J mice, which were maintained on standard rodent chow. Pregnancy could progress to embryonic day 17.5 before the dam was euthanized and the fetal and placental tissues weighted and collected. Placentas were snap frozen for analysis of RAS, 1-Carbon metabolism and apoptosis gene expression using RT-qPCR. PAS stain was used to examine the presence of Glycogen cells (GCs) in the
placental tissue sections. Paternal LPD and WD (with or without methyl donors) had no effect on male fertility or late gestation fetal growth. Placentas from WD and MD-WD fed males displayed reduced expression of RAS, apoptosis and 1-carbon metabolism genes. Supplementation of the LPD and WD with methyl donors had no additional effect on gene expression. No significant morphological changes in different layers of late gestation placentas were observed. Further studies are required to define the impact of these changes on placental function, fetal growth and offspring health.

Ben Purvis – University of Nottingham
Integrated Assessment Modelling for Urban Sustainability
By 2030, 60% of the global population will live in urban areas. Despite occupying only 3% of global land, these areas represent around 75% of global carbon emissions and energy consumption (United Nations, 2019). This centres urban policy and governance as a key lever in managing a transition to a sustainable society. Despite this, there remain relatively little tools available to aid policy makers in realising this transition. Urban systems are complex, they compose of numerous interacting socioeconomic and environmental subsystems, resources flows, and numerous actors with varying needs and priorities. Control is decentralised, with multiple levers existing across different hierarchical scales of governance. To confront some of these issues and aid in decision making we can borrow from simulation methodologies currently used in climate science. From here we can build abstract models of the urban system and produce future scenarios which allow for the exploration of potential policy action. This poster presents a prototype multi-scale urban integrated assessment model purposed towards assessing sustainability at the urban scale. It describes the model design and outputs, and discusses barriers that must be overcome for such methods to become fully operational including data requirements, stakeholder engagement, and the issue of the urban boundary.

References:

Tien Thuy Quach – University of Nottingham (tien.quach@nottingham.ac.uk or qt.tien@hutech.edu.vn)
Designing and optimising micro/nanoscale characterisation methodologies for the next-generation of multi-functional 3D-printed products
The United Nations has different strategies for sustainable development to transform our world and one of their specific goals by 2030 is to promote inclusive innovation, infrastructure, and industrialisation. In that context, Additive Manufacturing (3D Printing) is a promising approach with design flexibility and affordability to transform a number of industries such as automotive, aerospace, electronics, biotechnology and pharmaceutical. More recently, the University of Nottingham has led efforts to achieve the co-printing of multiple materials with multiple functionalities such as organic-inorganic materials in printed electronics or supportive/active materials in pharmaceuticals. The main challenge to enable this next generation of 3D printing technology relates to incompatibility in physical and chemical properties between materials, which can drastically restrict the efficacy, stability, and cost of products. To help overcome these problems, this project aims to develop robust analysis methodologies to investigate interfaces and interphases at the micro and nanoscale of a variety of multi-material, multi-functional 3D printed products. The work involves the employment of specialised techniques such as scanning electron microscopy (SEM), cryo-scanning electron microscopy (cryo-SEM), transmission electron microscopy (TEM), focused ion beam microscopy (FIB-SEM), atomic force microscopy (AFM), Raman microscopy, X-ray photoelectron spectroscopy (XPS), and time-of-flight secondary ion mass spectrometry (ToF-SIMS). For example, using SEM and TEM can help to analyse the interfaces of the cross-sections to confirm the composition of commercialised 3D printing electronics such as DragonFly sample (as a 3D-printed inductor from Nano Dimension Company). Another example is new application in health science when AFM and ToF-SIMS images can be used to verify the microstructures and the homogeneous distribution between model drug and oligomers of 3D printed implants.
Kare Wun Leung – University of Nottingham (Kwan.Leung@nottingham.ac.uk)

Psychiatric co-morbidity among offenders with mental disorders: A latent class analysis (LCA)

The study seeks to describe the prevalence and characteristics associated with psychiatric co-morbidity, and the co-relations between different combinations of psychiatric conditions. Little is known about how these disorders cluster together among forensic inpatient population in United Kingdom. The study aims to use Latent Class Analysis to examine patterns of lifetime psychopathology among mentally disordered offenders, identifying underlying clusters of patients based on the combinations of ‘conditions’ they manifest, and to describe the characteristics associated with each cluster. Currently it is not known whether co-morbidity clusters have distinct etiologies in terms of diagnostic type and whether co-morbidities can be differentiated by subtypes of ‘conditions’/ AXIS or DSM profiles or continuum of severity. The development milestones for these groups are likewise unclear. The study hypothesises that classes characterised by co-morbidities will be comprised largely of men based on the epidemiology of externalising disorders, the largest group comprising individuals with co-morbidities of schizophrenia, substance misuse and personality disorders (Cluster B). Since substance abuse and psychopathy have been confirmed as important risk factors in criminality, it is anticipated that patients with Group 1) multi co-morbidities are more likely more lifetime problems. They might be more likely to experience behavioural problems during childhood, engage in delinquency, develop substance dependency and develop early onset criminality during adolescence. Progressing to their adulthood, they are more likely to display anti-social/ borderline personality traits and psychotic symptoms and commit seriously harmful offence(s), than patients with patients with Group 2) ‘dual diagnosis’ or a Group 3) single diagnosis.

Charles Pierce – Bishop Grosseteste University (charliepierce19@gmail.com)

Drivers of resilience in Vanuatu

The Republic of Vanuatu is an archipelago of over 80 volcanic and coral islands in the south-west Pacific. In 2018, it had the highest disaster risk of 172 countries covered by the World Risk Index. As with other small island states, climate change is the most significant threat to sustainable development, especially because most of its 300,000 people live in coastal areas and pursue subsistence livelihoods. Additionally, Vanuatu’s location on the Pacific Ring of Fire makes it highly vulnerable to volcanic eruptions, earthquakes, tsunamis and landslides. The poster summarizes the drivers of resilience in Vanuatu’s communities, environment and economy, following the vision of its Climate Change and Disaster Reduction Policy 2016-2030. The principal hydro-meteorological, geological and biological hazards are symbolised by torrential rain at the top. Protection is offered through an umbrella of foreign aid (in red), representing financial and technical flows coherent with the UN’s 16 Sustainable Development Goals. The ostensible aim of this top-down assistance is the empowerment of communities in building resilience to disasters and adapting to climate change impacts - sea level rise, loss of food and water security and biodiversity, coastal erosion, urban migration. However, most aid is spent on disaster response and recovery rather than for practical education on adaptation. Resilience is also nurtured through bottom-up voluntary efforts within civil society (in brown) - ordinary people, environmental groups and faith-based organisations seeking the well-being of communities and building on millennia of experience. Financial assistance may come and go, but it is ultimately the fostering of self-supporting dynamic communities in which all individuals are treated equally, living in harmony with one another and their ecosystems, that will ensure abiding resilience to environmental change.

My research examines the role of these drivers of sustainability and the effectiveness of current formal, non-formal and informal education on resilience.
Sapphire Crosby – De Montfort University

A Germ’s journey: the impact of a co-created educational hand-hygiene intervention to address UN Sustainable Development Goals in Education and Health in the UK and low-and-middle-income-countries

The ‘Germ’s Journey’ health-education intervention was developed to address the challenge of teaching young children efficient handwashing techniques to tackle infection. WHO state that effective handwashing is integral for preventing the transmission of infectious disease, with evidence stating that one-third of infections could be prevented with correct handwashing. Children are particularly vulnerable in relation to both the spreading and contracting of infectious disease. Communicable diseases present as a significant cause of morbidity and mortality among children globally with diarrheal disease accounting for 1 in 9 child deaths (approximately 2,195 deaths a day). Despite this there are few handwashing resources specifically aimed at young children. Also, this age group is known to be particularly tactile and to spread germs through contact, therefore, handwashing quality is crucial in preventing the spread of infectious diseases. This project has demonstrated that multi-component resources improve handwashing behaviour in children and knowledge of germ transfer, addressing the UN Sustainable Development Goals for health (SDG3) and education (SDG4). This poster presents findings from a collection of studies that, following a Co-Creation and Participatory Action Research (PAR) model, evaluate whether specifically developed resources (‘A Germ’s Journey’) aid children in the UK and India’s understanding of hand-hygiene principles. Furthermore, it discusses how the findings can both inform the future development of culturally relevant resources for low-and-middle-income countries such as Sierra Leone, and have an impact on the reduction of childhood illnesses associated with diarrhoea and vomiting in the state of Gujarat, India. Educational health-hygiene workshops were conducted with schools in the UK and Sierra Leone and in collaboration with NGOs in India in areas of considerable socio-economic disadvantage. Mixed-method data was collected from children using quasi-experimental methods, using pre-workshop questions, follow-up questions, observations and baseline and post-workshop assessments. Data was collected from teachers using questionnaires and focus groups.

Bisola Ariyo and Olapeju Ogunmokun – De Montfort University (p2541080@my365.dmu.ac.uk)

Towards Sustainable Poverty Alleviation in Periods of Crisis – A case study of Leicester’s Food Plan.

Prior to COVID-19 pandemic, the Sustainable development Goals (SDGs) were considered a top agenda among local governments and city leaders as a framework to centralise local policy on sustainability targets (Smith and Wenger, 2007). As COVID-19 outbreak continues to threaten lives and livelihood, the priority of local decision makers may forcefully shift from the long-term goals to unsustainable recovery plans that fail to meet the SDGs targets (Horney et al., 2017). For instance, a study from the United Nations found that the pandemic disease has intensified the fragility of global food systems, and could hinder the achievement of both SDG 1 (no poverty) and SDG 2 (zero hunger) by 2030. Even in the United Kingdom, the inadequacies in the food supply chain is regarded as a key attribute to growing poverty (Sissons, Green & Lee, 2018). Cities such as Leicester, with a high level of poverty rate may need to examine the pathways for healthy and sustainable food (Edmondson et al., 2020). While it is essential to introduce various disaster recovery processes to tackle challenging situations (Song et al., 2017), the most important action is for policy makers to respond in a manner that is planned and sustainable regardless of the unplanned change (Shaw, 2018). Our study draws upon the theory of change to suggest that leaders can manage their vulnerability to sustainable level by linking sustainability into their local disaster recovery plans (Song et al., 2017). We analysed Leicester’s food plan developed in 2014 - 2016 and its theoretical implication for COVID-19 crisis. This is part of an ongoing research. Further research will examine how Leicester local recovery plans incorporate sufficiently with Leicester’s SDG 1 and SDG 2 policies/strategies with an aim to help government stakeholders successfully align their intervention plans with their expected outcomes.
Nwakaego Onyenokporo – De Montfort University (P16197505@my365.dmu.ac.uk)
Investigation into the sustainable use of rice husk ash to improve the cost and energy performance of buildings
This research aims to critically investigate the sustainable use of rice husk ash in construction to reduce the cost and improve the energy performance of dwellings in Nigeria. It seeks to reuse waste materials to partially replace Portland cement, which contributes about 7% of global anthropogenic CO2 production, to reduce the constant and excessive use of cement globally. Nigeria is a country with over 190 million residents, 60% of this population reside in urban areas. The scarcity of affordable housing has led to a proliferation of homeless people, slum dwellings, and increased levels of poverty as the major percentage of the population of the country is in the low-income group. With over 9 million tonnes of rice been produced annually, Nigeria is considered the largest rice producer in Africa and the 13th largest in the world. Therefore, the use of rice husk ash in construction will not only reduce the amount of cement being utilized, it could invariably reduce landfill wastes from rice mills and also reduce the overall cost of buildings, which is beneficial to developing countries like Nigeria with high cost of cement. This study employs various research instruments such as simulation study, experimental investigation, questionnaires, and interviews to properly address each of the objectives set out. In the end, this research will address the need for more affordable dwellings in Nigeria using waste materials to encourage sustainable building construction. This is also in line with the United Nations SDG 11 as it addresses the need for our communities and cities to be more sustainable.

Olande Onitijiu – De Montfort University (P13199486@my365.dmu.ac.uk)
Urbanisation and Informality in Lagos. A Shift towards Planning the ‘Unplannable’
Urbanisation has reached unprecedented levels in the history of humanity. Nearly 90 per cent of urban growth will take place in Asia and Africa by 2050 (UN DESA 2018). The Global Urban Observatory recognises urbanisation in sub-Saharan Africa to be mostly characterised as an informal and spontaneous type of urbanisation. My research starts to look at the position of African Urbanism in the world, and the risk of climate change draws the need to rethink informality in the context of the African city and community. My presentation highlights the importance of African cities to recognise the need to address issues in informal settlements as they are often seen as ‘unplannable’. Part of the challenges of such communities apart from poor housing structures is the high level of poverty and lack basic urban services infrastructure. African cities need alternative modes of urbanisation that focus on addressing informality as it would enable Africa to take advantage of its high urbanisation rate. It is also important to recognise each city with its different patterns, processes, forms and functions as Informal settlements are not homogenous. Focusing on Lagos, Nigeria, where roughly 70% of Lagosians live in informal settlements and struggle to participate in formal structures of society. Some of these settlement communities function using a local leadership structure set up to provide access to infrastructure to poor households. This presentation sees informal settlements as products of rapid urbanisation and lack of infrastructure which face challenges due to its relationship with informality in the urban fabric of cities they exist. Focusing on what we can learning from these communities through a case study approach which would give insight to perspectives to understanding the state of the problem and suggest methods for possible upgrade.

Ross Little – De Montfort University (ross.little@dmu.ac.uk)
Prison Pedagogy
The research focuses on the pedagogical benefits and challenges of bringing together university students and prison learners together for a shared learning experience in prison. It seeks to contribute to understandings about education and learning in prison, and implications for pedagogical practice in prisons and universities, particularly from the perspectives of prison students and university students. The research derives primarily from a question associated with how we create or enhance learning opportunities
in prison contexts. Here there is a link with at least one of the Sustainable Development Goals, particularly number 4, which focuses on the provision of ‘Quality Education’ across different societal contexts. The research makes use of literature from several different, and yet inter-related, fields of study: pedagogical scholarship, prison sociology, prison education, and ‘desistance’ literature, the process by which people move away, over time, from criminal behaviour. The three main research methods employed are semi-structured interviews with course participants; participant and facilitator observations of the course, and; end of course written reflective assignment and participant reflection sheets. Thematic data analysis is being used to identify emerging themes in a systematic way that responds to the research aim and objectives. As an aside, the associated work in prison featured as part of the ‘DMU Local’ nomination in 2018 for a Guardian University Award for social and community impact and was a finalist at the Times Higher Awards in 2018 for outstanding contribution to the local community. It was also a finalist at the Green Gown Awards (2019), which recognise sustainability projects in the further and higher education sectors.

Lijia Ma – University of Leicester (lm451@leicester.ac.uk)

Make it more Green: a water efficiency proposal for Norwich Castle Museum Sustainable Project

Efficient use of clean water is one of the UN Sustainable Development Goals. “Sustainable development is crucial to harmonise three core elements: economic growth, social inclusion and environmental protection.” A green museum play significant roles in all the three aspects which is an environmentally friendly and sustainable museum. The building of Norwich Castle Museum (NCM) was built by the Normans as a Royal Palace 900 years ago where sustainable status was not quite optimistic. The energy consumption (128) was beyond the typical criteria (100) and there had been no professional environmental team who took charge of controlling the energy efficiency in NCM. In 2016, NCM joined the Environmental Action Plan 2014-2018 from Norfolk Museums Service to improve the energy performance aiming to establish NCM as an exemplar of a green museum and attract new audiences through green tourism. This water efficiency proposal is to evaluate how “green” NCM was in 2017 and put forward sustainable recommendations in the perspective of water efficiency.

Imran Hossain – University of Leicester

Informal Entrepreneurship and Poverty Alleviation: The Journey of a Rural Entrepreneur

Entrepreneurship is a key driving force for economic development. However, little research has been done into how people practise informal entrepreneurship within a rural economy. For under-developed countries, entrepreneurship is mostly portrayed as highly insecure and unstable, involving long hours and poor working conditions. Even within some rural communities in Bangladesh, entrepreneurship can be seen as a survival tool for many traders. However, the meaning of words and how we define success can change with conditions. Miserable poverty and limited resources reshape the essence of entrepreneurship within the rural communities. Traders’ past experiences of their natural world transform their current entrepreneurial practices and the way they alter their social structure to support their entrepreneurial practices. To understand practices of informal entrepreneurship, we need to develop a deeper understanding of the context where entrepreneurs operate, existing cultural norms, dynamic of interaction between social structure and human agency, and experience of individual actors go through within social structures. To explore rural entrepreneurial practices, I started with the rural village markets in Bangladesh. The Rural Market (Haat) is not only the lifeline of a rural economy but also helps to preserve and promote the local rural culture and tradition. I spent a significant amount of time in the rural markets to understand entrepreneurial ecosystems, which support rural informal entrepreneurship. I have used ethnographic research tools to understand individual traders’ day to day activities and highlight their journey of being an entrepreneur. I also observe how they are affected by social structure or vice versa. Some of the characteristics of a successful entrepreneur such as risk-taking, quick decision making can also be seen among rural traders. Rural traders developed various survival strategies to prosper and maintain order within their natural world. By exploring the entrepreneurial journey of rural traders give us a more in-depth understanding of the hidden entrepreneurial culture and practices within rural communities in the context of Bangladesh. Studying entrepreneurial
activities at a micro level may provide management scholars with a very different understanding of entrepreneurship. It will also help local policymakers to develop policies with have long term sustainable impact on local communities.

Kenji Ishihara – University of Leicester

Green consumption practices of Christians in Japan: an analysis through the lens of Bourdieu’s concepts

This research project explores green consumption practices of Christians in Japan. Green consumption is a consumers’ response to environmental concerns through engagement in consumption processes with less impact on the environment. Scholars recently devote substantial attention to the influence of religion on promoting green consumption, as religious leaders called for the transition of lifestyles into more sustainable ways. Some consumer researchers have adopted positivistic approaches, mostly through the socio-psychological methods, to seek the linkage between religiousness and pro-environmental behavior. However, focusing only on individual factors has a risk of losing the sight of social aspects of religion and often fails to explain the dynamics of social contexts that shape practices. Thus, utilizing social practice theories, which focus on the formation and performance of practices in a social context, this project attempts to explore whether, why, and how Christian consumers engage in green consumption as a religiously reasoned practice for caring for the environment and how dynamic social contexts of religion influence people to engage in green consumption. Through Pierre Bourdieu’s concepts of habitus, capital, and field, this project outlines eco-habitus and cultural capital, religious habitus, and social capital as key components of a conceptual framework. Eco-habitus and cultural capital help explain why and how people engage in sustainable consumption practices regardless of the economic level, whereas religious habitus has a substantial effect on shaping believers’ tastes in everyday practices. Social capital enables the researcher to observe the connections inside and outside the religious community. This poster visually illuminates the framework to comprehend the confluence of the field of religion and the field of green consumption as the site of green consumption practices of Christian consumers. The framework will also be used for planned qualitative research, which combines semi-structured interviews, visual methods, and online ethnography to Christian consumers in Japan.

Annabel Goddard – University of Loughborough (A.Goddard@lboro.ac.uk)

The Risks of Risk Assessment

Child protection services are chronically overwhelmed and have developed risk management processes to allocate scarce resources. A large increase in the care population is largely made up of adolescents entering care for the first time, yet many existing risk assessment tools are predicated on assumptions child abuse is intra familial and of younger children. Many older children and young people describe feeling labelled as risk taking, criminal or troublemakers and the present research seeks to determine the role of risk assessment proformas in perpetuating this perception. Children in care are arguably to most reliant on social workers and how they believe their social worker perceives them is integral to identity formation and positive working relationships. Responses to organisational workload issues such as the design of risk assessments has the potential to inadvertently be contributing to poor relationships between social workers and children which in turn increase workload and frequency of crises. In order for services to remain viable and function properly overly bureaucratic and risk averse processes require change in order to sustain effective and meaningful social work moving beyond crisis intervention. The researcher intends to examine, from the narrative of practitioners and children, the unintended consequences of risk assessments on the perceptions of children in care. Risk assessments may act as a convenient organisational tool to help services cope with demand however, the proformas are loaded with preconceptions of normative child development. The potential consequence for vulnerable children in need of protection, is that through the process of risk assessment, they become perceived as risky themselves which ironically often provokes risk-taking behaviours. The examination of assessment models in the context of influencing perceptions of children necessary to inform practice in a rapidly evolving context of child protection and ensure the future sustainability of children’s services.
Tymèle Deydier – University of Loughborough

Microfluidic Production of Drug-loaded Biodegradable Polymer Microparticles for Drug Delivery Applications

For my research, I use oil-in-water emulsions in microfluidic devices to encapsulate drugs in biodegradable polymer microparticles. These particles will then be coated onto novel angioplasty balloons which are used to widen narrowed blood vessels in the treatment of cardiovascular disease (group of diseases related to the heart and blood vessels). The particle production is done in two steps. First, both the polymer and the drug are dissolved in an organic solvent (oil solution) and injected through a microfluidic channel where it is squeezed by an aqueous solution which produces oil-in-water droplets. These droplets are then collected and solidified into drug-polymer particles, which are later analysed.

Safia Bahas – University of Loughborough

Measuring passenger satisfaction as an output of airport operational performance – A UK perspective

Since the deregulation of commercial aviation, airports have transformed from being basic service providers to being publicly or privately operated businesses that value operational efficiency and financial gains while continuing to provide the service. This has resulted in both the industry and academia researching on airport operational efficiencies and developing tools for measurement. Meanwhile, the concept of service quality and passenger satisfaction has gained importance over the years as airport competition increased. Currently, there are fewer studies that view passenger satisfaction as one of the outputs of airport performance. Hence this study will be computing operational efficiencies for airports while considering the service quality impact of airports as an output and will investigate the factors that determine this satisfaction-based operational efficiency of airports. This is carried out by a two-stage analysis. The first stage analyses the overall satisfaction ratings of UK airports as an output to measure the airport efficiency in the years 2017 and 2018 using the method of data envelopment analysis (DEA). The results of this will be employed in a second stage regression analysis to identify the significant factors that contribute to become an airport with quality and efficiency. The factors that will be tested includes airport ownership, airport size, hub status and traffic mix. The results of this study will give airport managers a method for incorporating passenger satisfaction data collected into the wider decision-making process for the airport.*

*This is an ongoing research, the results of which will be available for presentation in September.
Appendix C: 3 Minute Thesis Presentation Abstracts

Jane Hearst – De Montfort University
Building and Measuring Value in Arts-for-Health Services
Recent years have seen an increase of interest in Arts-for-Health services within the UK. But just like any other service that is situated within a capitalist economy, there are a number of factors affecting their commercial success. Jane’s study seeks to understand these factors, starting with an analysis of language currently used in their promotion. The study goes on to identify 5 core functions of Arts-for-Health services. By analysing the arts approach to these functions, in comparison to other services targeting the same categories, the study intends to identify unique selling points, more sustainable sources of funding and allow for more informed service design.

MJ Brown – University of Loughborough
Fighting fit: How a 3D cancer-stem cell model can help us understand why moving is medicine.
Devastatingly, in approximately 5-10% of all breast cancer cases, the cancer has already started to spread and invade nearby tissues before diagnosis; this is almost always fatal for the patient. What if the combination of exercise and a type of stem cell already present within our bodies, could reduce breast cancer invasion? I have developed a 3D model that allows me to create tumours consisting of breast cancer cells and a specific type of stem cell in the lab. This way, I can investigate how these two cell types interact and how this interaction might be influenced by exercise. I’ve already found that these mesenchymal stem cells communicate with breast cancer cells and reduce their overall invasion. I’ve also found that exercised serum can reduce breast cancer invasion. The next step? Combine mesenchymal stem cells and exercise with breast cancer, to see if we can beat breast cancer invasion.

Yousif Al-Daffaie – Nottingham Trent University
Caged Birds don’t Sing: The Buried Voice of Mosul
As the Historic Core of Mosul is undergoing its physical recovery, it is just as urgent to maintain the informal practices, cultural heritage and social interactions within the process. This Project bridges the physical and social recovery of the City of Mosul -- the second biggest city in Iraq and the most affected by ISIS. To achieve that, the Project undertakes qualitative methodologies to prioritize the Locals as the backbone of the process of reconstruction, in an aim to ensure the authenticity of the physical reconstruction, through maintaining the social interactions and informal practices within the Historic Core of Mosul.
Daniel Koomson – University of Derby (D.Koomson@derby.ac.uk)
Vulnerability and Adaptive Capacity of Rural Coastal Fishing Communities to Climate and Environmental Change
About 90% of global fisherfolk are small-scale fishers. Due to climate and environmental change process, their catches and incomes are dwindling, and entire fishing communities are at the brink of collapse. This research aims at explaining how global environmental change and local socioeconomic process are interacting to make small-scale fishing livelihoods untenable. Using two fishing communities in Ghana, West Africa as case-studies, qualitative methods were used to collect data on the lived experience of climate change vulnerability. This was combined climatic data to profile the vulnerability of each household. The results demonstrate that fishing households experience a unique but traceable pattern of high and low vulnerabilities throughout the year, depending on the gender and wealth-status of a household-head, as well as the success or failure of a fishing season. Although this pattern is dynamic, it enables the identification of key entry points in time and space for introducing interventions that bolster resilience.

Nicci Vella – University of Northampton
Social Work Education and Domestic Violence and Abuse
Love shouldn’t hurt! You would think that would be a black and white issue. Research in the domestic violence and abuse field is however far from straightforward. Domestic Violence and Abuse (DVA) destroys lives and costs society approximately £66 billion per annum. It is the most common factor for children in need in the UK yet social workers can complete their training without any specific reference to DVA.

This project aims to:
• produce a solution-focused piece of research exploring the tension between social work education and practice.
• gain greater understanding of the way social work students think about DVA.

Surveys will be carried out with social work students from five universities to measure their own feelings of preparedness to work with DVA at the point they qualify. Academics and practitioners already working in the field will be asked what they believe social workers should be taught. The findings from this research will be presented to programme leaders at each of the universities to establish what (if any) barriers exist to providing more DVA education on social work programmes. This project has the potential to impact on the curriculum, helping social work students to gain understanding, be better placed to respond appropriately and therefore help the children who are forced to live with the consequences of DVA.

Catherine Vasey – University of Nottingham
Investigating Drug-Loaded Nanoparticles in the Treatment of Glioblastoma
Glioblastoma is a type of brain tumour with a devastating outcome. Despite a multimodal treatment method of surgery, radiotherapy and chemotherapy, less than 5% of glioblastoma patients will survive 5 years after diagnosis. My laboratory has formulated a drug delivery device which can be inserted during surgery. This device acts as a paste at room temperature, allowing the surgeon to apply it to the lining of the cavity left behind after tumour removal, and solidifies at body temperature, meaning it can retain the cavity shape. We hypothesised that incorporating drug-loaded nanoparticles into the paste would allow an effective treatment method for glioblastoma. I have designed and synthesised drug-loaded nanoparticles and tested their toxicity against a range of glioblastoma cell lines. The nanoparticles can kill the cancerous glioblastoma cells, leading to a promising drug delivery strategy in the treatment of glioblastoma.
Margherita Colucci – University of Leicester
Climbing the family tree to solve a crime: genetic identification for forensic applications
DNA evidence may appear as the CSI “superpower” for identifying an individual or a suspect. However, reality being more complex than crime fiction, the story becomes more complicated when no perfect match appears in the database search and no additional information and evidence are available: classic forensic DNA identification approach may not be enough. This is the case for complex scenarios as disaster victim identification (i.e. victims of natural and accidental disasters, of terrorism-related events) or missing individuals. Using diverse tools and knowledge not only from genealogical reconstruction, but also from biomedical genome research, this study explores new methods of DNA profiling in which the possibility of comparing profiles for finding similarities instead of a perfect matching may help in identifying and confirm a relationship. Going beyond paternity testing to include more distant relationships, the possibility of reconstructing a family tree can lead to individual identification.

Emma Rogers – Bishop Grosseteste University
Investigating the lived experiences of student teachers’ as readers and the formation of a ‘reading teacher’ identity.
This research project attempts to explore through correlation the phenomenon of identity creation in student teachers. First year students (n=30) were asked first to represent their reading history in the form of a picture. The pictures were used as physical artefacts to elicit discussion in interviews (n=3). Whilst most students identified memorable reading experiences with parents in their life history drawings, this was not the case for all student and a prevalence of text books and school-based artefacts indicates that, for most participants, reading was a school-based task. More than half of the drawings indicated a decline in reading during the teenage years, with only a few beginning to read again whilst at university. This calls into question the beliefs and values they hold about reading for pleasure and the role they will play in children’s lives as reading teachers.