

Newsletter













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Introduction from Head of School

Dear All,

t's that time again, welcome to the Summer School Newsletter! Like Frank Sinatra, I am making another comeback and so will continue as HoS until Christmas, all being well. From 1st January, the new Head of School, Douglas Mair, will take over. I am hoping that he will be able to visit the School before then to meet people and to get a feel for the place, and wish him luck in his new role.

While there are still many things that can and have to be improved in the School, I am reassured that our trajectory is positive, particularly in terms of UG student numbers; this is very important and has really made a difference in terms of our budget and funding of field work, demonstrators etc.

We now have our REF plans in both Departments and we will be keeping staff informed of progress, but we should not think that research is all about audit. This newsletter celebrates research successes in terms of funding, but I would particularly like to highlight the contribution of our expanding PhD student population. As we saw at the recent School PGR conference, our students are a vibrant group and are fundamentally important in our research effort.

et's also celebrate with our new graduates across the School on July 24th. Congratulations to all of them for what they have achieved. I hope that they and their families have a great day we will of course be wishing them good luck at our reception, please try to make it.

> **Best regards** George





Congratulations and celebrations on funding successes in SoES

P Investigator	Funder	Project Title	Department	Total Cost
Dr Gemma Catney Co-I	British Academy/ Leverhulme Trust	The Role of People and Place in Neighbourhood Identity: Belonging and Social Inclusion	Geography and Planning	£9,999
Dr Jonathan Green	The British Ornithologists' Union	Preliminary assessment of seabird conservation priorities in the Cayman Islands	Earth, Ocean and Ecological Sciences	£2,500
Prof Yan Lavallée	Landsvirkjun	Mechanical and permeability constraints for improved geothermal reservoir exploitation at Krafla, Iceland	Earth, Ocean and Ecological Sciences	£14,770
Dr Kate Parr	Australian Research Council	A global scale analysis of functional traits in the face of global change	Earth, Ocean and Ecological Sciences	£3,497
Dr Leonie Robinson (Dr Jonathan Green Co-I)	European Commission	AQUACROSS: Knowledge, Assessment and Management for AQUAtic Biodiversity and Ecosystem Services Across EU policies	Earth, Ocean and Ecological Sciences	£322,995
Prof Jonathan Sharples (Claire Mahaffey George Wolff, Co-Is)	NERC	CaNDyFloSS: Carbon and Nutrient Dynamics and Fluxes over Shelf Systems	Earth, Ocean and Ecological Sciences	£4,684
George Wolff	NERC	COMICS: Controls over Oceanic Mesopelagic Interior Carbon Storage	Earth, Ocean and Ecological Sciences	£272,135
Richard Worden	Petrobras (Brasil)	Extension to JIP Chlorite cement prediction in sandstones project	Earth, Ocean and Ecological Sciences	£100,00
Richard Worden	Woodside Energy Ltd (Australia)	Extension to JIP Chlorite cement prediction in sandstones project	Earth, Ocean and Ecological Sciences	£125,000

Inter-relationships between neighbourhood belonging, identity and community

Project Title: The Role of People and Place in Neighbourhood Identity:

Belonging and Social Inclusion

Co-I: Dr Gemma Catney

Department: Geography and Planning

Funder: British Academy/Leverhulme Trust

Total Project Cost: £9,999

Dr Gemma Catney was recently successful on an application to the British Academy small grant scheme. The project, with PI Diane Frost (Sociology, University of Liverpool), uses an area in South Liverpool to explore interrelationships between neighbourhood belonging, identity and community. The 'Toxteth' (Liverpool 8) area presents a useful case study for this research given its long-standing and growing diversity from migrant settlement. Liverpool 8 (L8) also witnessed a series of urban riots, rooted in social inequalities, racial discrimination and policing, which has reinforced community solidarity. The project will explore questions including to what extent does L8 compose different 'sets' of communities, with important distinctions and differences? Are neighbourhood identities influenced by social, geographical and political factors? What contributes to people's sense of belonging to neighbourhood and how do their identities affect their lived experiences? The project will contribute to our understanding of the complex processes involved in neighbourhood belonging and inclusion.

Grant Success

COMICS

Project Title: Controls over Oceanic Mesopelagic Interior Carbon Storage

PI Professor George Wolff

Department: Earth, Ocean and Ecological Sciences

Funder: NERC

Total Project Cost: £272,135



he surface ocean is home to billions of microscopic plants called phytoplankton which produce organic matter in the surface ocean using sunlight and carbon dioxide. When they die they sink, taking this carbon into the deep ocean, where it is stored on timescales of hundreds to thousands of years, which helps keep our climate the way it is today. The size of the effect they have on our climate is linked to how deep they sink before they dissolve - the deeper they sink, the more carbon is stored. This sinking carbon also provides food to the animals living in the ocean's deep, dark 'twilight zone'. Computer models can help us predict how future changes in greenhouse

gas emissions might change this ocean carbon store. Current models however struggle with making these predictions. This is partly because until recently we haven't even been able to answer the basic question 'Is there enough food for all the animals living in the twilight zone?'. But in a breakthrough this year we used new technology and new theory to show that there is indeed enough food. So now we can move on to asking what controls how deep the carbon sinks. There are lots of factors which might affect how deep the material sinks but at the moment we can't be sure which ones are important. In this project we will make oceanographic expeditions to two different places to test how these different factors affect carbon storage in the deep ocean. We will measure the carbon sinking into the twilight zone and the biological processes going on within it. Then we will determine if the systems are balanced - in other words, what goes in, should come out again. We will then write equations linking all the parts of the system together and analyse them to make them more simple. At the same time we will test whether the simple equations are still useful by seeing if they produce good global maps of ocean properties for which we have lots of data. Finally, when we are happy that our new equations are doing a good job we will use them in a computer model to predict the future store of carbon in the ocean.

Iceland 'hot rock' study

Project Title: Mechanical and permeability constraints for improved

geothermal reservoir exploitation at Krafla, Iceland

PI Professor Yan Lavallée

Department: Earth, Ocean and Ecological Sciences

Funder: Landsvirkjun

Total Project Cost: £14,770

The goal of the proposed study is to constrain the mechanics of the reservoir rocks in the Krafla geothermal system. The experimental work will describe the response of the lithologies at Krafla to different conditions of stress and temperature, and will constrain the permeability of the reservoir rocks (intact & broken) at natural conditions. This constraint will seek to bridge the knowledge gap on "hot rock permeability" for more efficient exploitation of the Krafla reservoir. The study further aims to understand how fluid flow efficiency of the reservoir rock increases with thermal stimulation by water injection as well as during tectonic rifting events. The mechanical dataset obtained will further contribute to current collaborative efforts to constrain magma reservoir conditions targeted by the Krafla Magma Drilling Project which aims to increase our understanding/ detection of magma residence as well as the efficient and safe utilisation of this high thermal anomaly for increased geothermal production.



AQUACROSS

Project Title: Knowledge, Assessment, and Management for AQUAtic

Biodiversity and Ecosystem Services aCROSS EU policies

PI: Dr Leonie Robinson
Co-I: Dr Jonathan Green

Department: Earth, Ocean and Ecological Sciences

Funder: European Commission

Total Project Cost: £332,995

AQUACROSS aims to support EU efforts to enhance the resilience and stop the loss of biodiversity of aquatic ecosystems as well as to ensure the ongoing and future provision of aquatic ecosystem services. It focuses on advancing the knowledge base and application of the ecosystem-based management concept for aquatic ecosystems by developing cost effective measures and integrated management practices. AQUACROSS considers the EU policy framework (i.e. goals, concepts, time frames) for aquatic ecosystems and builds on knowledge stemming from different sources (i.e. WISE, BISE, Member State reporting, modelling) to develop innovative management tools, concepts, and business models (i.e. indicators, maps, ecosystem assessments, participatory approaches, mechanisms for promoting the delivery of ecosystem services) for aquatic ecosystems at various scales. It thereby provides an unprecedented effort to unify policy concepts, knowledge, and management concepts of freshwater, coastal, and marine ecosystems to support the cost-effective achievement of the targets set out by the EU 2020 Biodiversity Strategy.

Gannets to be tracked in real-time using 3G technology

The University is part of an innovative project that will track in real-time - using the 3G mobile network - the vast distances gannets fly. This is the first time this type of monitoring has ever been attempted for birds at sea.

↑ Track a Gannet' – or T.A.G for short - gives people the chance to see how Britain's largest native seabirds journey through the English Channel from nests off Alderney in the Channel Islands to find food for their chicks, with data from GPS tags uploaded onto the web. The data has already revealed a fishing trip totalling more than 800km (500 miles) through the Channel and one bird has been tracked flying up as far as the Thames Estuary. The website where the flight paths of the gannets are uploaded also has a live webcam streaming images of the gannets nesting on a exposed 25 metre high (82 ft) rock three miles offshore, where 2,200 pairs of the birds nest.

The project is jointly run by the University of Liverpool, Britain's smallest Wildlife Trust, the Alderney Wildlife Trust (AWT) and the British Trust for Ornithology (BTO).

Alderney's northern gannets are the most southerly breeding population of the birds in the British Isles, and the species is "amber listed" amid conservation concerns that it only breeds in significant numbers at a small number of locations.

Dr Jonathan A Green, Senior Lecturer in Marine Biology at the University of Liverpool, said: "Marine Renewable Energy Installations have the capacity to make a major contribution to meeting CO2 emissions targets, but the impacts of these installations to biodiversity are still very uncertain. Our work at Alderney is one of a very small number of studies which is trying to make an assessment of how seabirds might be impacted, whether positively or negatively. We are very excited to be working in partnership with AWT, ACRE and the BTO. Using the very latest generation of tracking devices we can gain unparalleled insight into the behaviour and ecology of these fascinating seabirds."

V presenter Simon King, the Alderney Wildlife Trusts' president, said: "In the last decade webcams and television have brought the drama of 'the bird nest' into millions of people's homes. At the same time GPS tagging has helped scientists to understand so much more about what birds get up to, from where they forage to how they travel thousands of miles on migration. What's being done in Alderney uniquely combines both technologies and more."

he journeys being made by the gannets and the webcam of their nesting site can be seen at www.teachingthroughnature.co.uk/t-a-g



Researching school books as a source for extreme weather in the Outer Hebrides



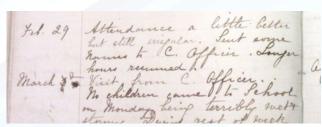
Planning, are currently working on 'Spaces of experience and horizons of expectation: the implications of extreme weather events, past, present and future', an investigation of extreme weather events in the UK. This three year project which started in December 2013 is funded as part of the Arts and Humanities Research Council (AHRC) 'Care for the Future: thinking forward through the past' programme, and examines extreme weather events in the United Kingdom such as droughts, floods, storm events and unusually high or low temperatures since 1700. The project involves eight researchers based at the Universities of Nottingham, Glasgow, Aberystwyth and Liverpool. It takes an interdisciplinary approach, seeking to provide insight into how and why such events became inscribed into the memory of a community or an individual in the form of oral history, ideology, custom, behaviour, narrative, artefact, technological and physical adaption, including changes to the working landscape and built environment.



In February 2015 Neil and James along with Dr. Simon Naylor (School of Geographical and Earth Sciences, University of Glasgow), visited Tasglann nan Eilean Siar (Hebridean Archives) at Stornoway to examine surviving source material. They found that by far the most useful source were school log books which became compulsory after The Education (Scotland) Act of 1872. The books frequently record extreme weather events as well as providing insight into the everyday lives of the island communities. Recently Neil, James and Simon returned to the Outer Hebrides to consider in more detail the extent to which the lives of islanders were affected by extreme weather events, for instance, with regard to economic activities, such as, crofting and fishing, and also transport.

As James outlined: "The aim of the latest visit was to adopt a two tier approach to ensure greater geographical coverage, whilst also focusing on a small number of schools in order to cover a wider chronological span. We viewed and photographed a large number of school log books held at Castlebay Community Library, Isle of Barra, Lionacleit Community Library, Isle of Benbecula, Tarbet Community Library, Isle of Harris, and Stornoway Library, Isle of Lewis. The log books for Mingulay and St Kilda schools, two islands that were evacuated in 1912 and 1930 respectively have been digitized with assistance from the National Records of Scotland. Some schools which remain open retain their log books. Whilst in Stornoway we also took the opportunity to meet with Dr. Edward Graham, a meteorologist based at the Lews Castle, Stornoway campus of the University of the Highlands and Island (UHI) and representatives from Stornoway Historical Society."

#School log books are a fascinating source for extreme weather. As well as recording school attendance and the educational activities undertaken, the teacher often gave a daily summary of the weather in the log book remarking for example 'weather good', 'weather warmer and fairer', 'weather very fine' - those were good days! However, these starkly contrast with the description of boisterous,

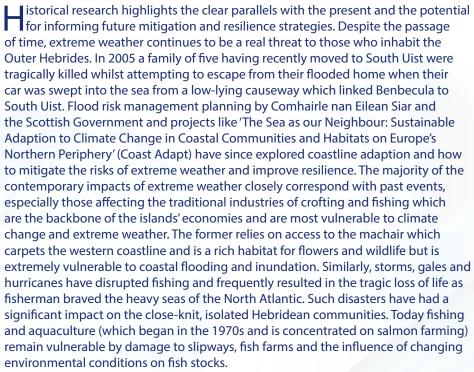


cold, snowy conditions and snowstorms, stormy, wet and windy weather which was far more typical. Indeed an impression emerges from reading the log books that typically everyday winter weather was essentially extreme weather. There are also detailed descriptions of the impact of extreme weather, for example, when the slates were blown off the school roof at Barvas (10 March 1882), a parish on the west coast of the Isle of Lewis. Reference is also made to doors being snowed up and roads being in a very bad state. In some instances it is possible to determine the duration of extreme weather events, such as the entry for 24 January 1889 which recorded that 'attendance has fallen this week owing to heavy snowfall which continued more or less for the last five days... the want of shoes and clothing is the prominent excuse."

Clearly weather hampered attendance, hence periods of stormy conditions, snow, high winds, heavy rainfall and droughts were frequently remarked upon. Also

Northbay school logbook 1884 recorded were wider aspects of community life such as agricultural activities, for instance, spring work, the summer pasturing of livestock, harvest work and the lifting of potatoes, the loss of fishermen, boats and ships, outbreaks of diseases like cholera, measles, scarlatina, small pox and typhus, the poor state of living conditions and the lack of adequate shoes and clothing for school children. One interesting entry in the school log book for Barvas which will appeal to geographers is that of 24 July 1895 which recorded: 'Closed school today at nine o'clock, as the children are to be entertained by the men of the Ordnance Survey who are at present encamped in Barvas."

The impacts of extreme weather: historical and contemporary



urther effects of extreme weather include disruption to the construction industry and utility supplies, a lack of drinking water (which can be detrimental to health), a greater sense of isolation due to road closures, and damage to harbours, jetties and strategic infrastructure such as airport runways or port link spans. There can also be difficulties in transporting people off the islands for healthcare (due to the disruption to lifeline air and ferry services during periods of extreme weather), damage to radio and telephone masts and power lines, and the interruption of mobile phone coverage and internet connection. Houses and buildings are vulnerable to flooding and high winds and the weather can have a devastating impact on tourism businesses and events. Neil explained: 'Having returned from our second research visit we are now developing ideas for publications and considering how the evidence from school log books can be indexed to other source materials, specifically local and regional newspapers and long instrumental records which for Stornoway start in January 1857. By exploring past extreme weather events, the project places recent events within an historical context, investigating not only the timing, frequency and impact, but also the processes by which certain events enter the cultural memory of a community, region and nation."

or further information about the project, visit the website and blog at the following addresses: www.nottingham.ac.uk/weatherextremes and https://blogs.nottingham.ac.uk/weatherextremes. The project email address is: weatherextremes. Twitter feed @Weather_Extreme and Facebook.com/weatherextremes.





FIRE ALARM in Indonesia

A new international research programme FIRE ALARM was launched in April 2015 at the Southeast Asian Regional Centre for Tropical Biology in Bogor, Indonesia just as the next El Nino episode gains in strength. Fire generates a large proportion of CO2 emissions in SE Asia and most fires are linked to human activities, such as forest clearance for palm oil production; but fire is also strongly modified by climatic conditions. FIRE ALARM will investigate the changing socio-economic and environmental drivers and impacts of current fire in Indonesia; improve systems for monitoring fire and forecasting future fire risk and propose strategies for mitigation of the harmful health, biodiversity, socio-economic and climatic effects of fire. The programme is led by Prof. Richard Bradshaw and comprises a partnership from Liverpool, Indonesia, Sweden, Australia and the USA. FIRE ALARM will become part of the new Future Earth research platform (http://www.futureearth.org). Current startup funding is from Sweden and Australia.



The FIRE ALARM launch with the Indonesian team and international support

International Academic Fellowship award

Dr Fabienne Marret-Davies (Geography and Planning) was awarded a Leverhulme International Academic fellowship to support her 6-month research visit in 2016 at the GNS Science, Te Pü Ao, in New Zeleand to exploit dinocysts as tracers of oceanic conditions in the SW Pacific Ocean.



30th International Geographical Congress Award to Population Geographer

Dr Gemma Catney (Geography and Planning) was awarded a Thirtieth International Geographical Congress Award, by the Royal Geographical Society with the Institute of British Geographers. The award (£750) will fund travel to the International Conference on Population Geographies at the University of Queensland (Brisbane), 30th June – 3rd July 2015, where she will be presenting two papers and convening and chairing the sessions on Ethnicity.





Staff Snapshots

The School offers a warm welcome to the following new members of staff . . .

Planning. I graduated from Heriot-Watt University in Edinburgh with a Ph.D. in Physical Chemistry in 2007. My research involved using class IV lasers to study the dynamics of gas-liquid reactions, more specifically the reaction between O(3P) atoms and liquid hydrocarbons. Following on from this, I graduated from the University of Manchester with a P.G.C.E. in Secondary Science Education in 2009. I then worked as a secondary school science teacher at a high school in Cheshire for 6 years before joining the University of Liverpool in February 2015 where I was employed as a teaching laboratory technician in the CTL. I joined the School of Environmental Sciences in June 2015 as the new OSL research laboratory technician. I am excited to take up this new role and I am looking forward to meeting everyone and learning more about the department.





Jenny Mobbs – Research laboratory technician, Geography and Planning. I'm returning to the School of Environmental Sciences three years after I gained my MSc in Environment and Climate Change. In these three years I have travelled around SE Asia, worked within a marine forensics company, worked for a local housing association to calculate the company's carbon emissions and for the past year I have worked in marine transport logistics.

'm excited to re-join the SOES and I am looking forward to getting back into working within the labs.

annah Jones – Project Manager AQUACROSS, Earth, Ocean and Ecological Sciences. I joined the department at the beginning of June to work with Dr Leonie Robinson on the AQUACROSS project which recently kicked off in Brussels. AQUACROSS is a Horizon 2020 project which aims to support EU efforts to enhance the resilience and stop the loss of biodiversity of aquatic ecosystems as well as to ensure the ongoing and future provision of aquatic ecosystem services. I completed a BSc in Geology and an MSc in Environmental Technology focussing on analysis and assessment at Imperial College, London before joining the Carbon Trust. After 3 years working as a Project Manager for a supplier of energy efficiency technology I took a career break to travel. I have been working at the University of Liverpool for just over 2 years and was previously based within the School of Engineering. I am looking forward to being a part of the team at SoES.





... and goodbye to

Fiona Kennedy who leaves the Student Experience Team to join the School of the Arts as Student Experience Coordinator (Assessment and Progression).

iona joined the School of Environmental Sciences in February 2014 as a Student Experience Programme Administrator based in North Campus and became a valued and respected member of the team and wider School community.

No doubt she will become a valued member of the School of the Arts Student Experience Team and we wish her success in her new role.

Our postgraduates carry out interesting, varied and often vital research across all areas of Environmental Sciences

Arton Fabók - Space and Cultural Change; Geography and Planning.Governing a nuclear megainvestment: A multi-scalar ethnography on Anglesey.

The proposed construction of the new Wylfa nuclear power plant is transformative for the island of Anglesey, north Wales, and well beyond. The investment costs are around double those of the London Olympics'.

y PhD project provides an in-depth case study of this investment with an eye on understanding the long-term future of nuclear power in the UK. My PhD project started in October 2012 embedded in the Adaptation and Resilience in Coastal Energy Supply (ARCoES) research framework.

use a qualitative research approach, namely an ethnography across multiple geographic locations and scales. In practice, I spent most of my last year living in the local community, next to an existing nuclear power plant, soon to be decommissioned. I interviewed a wide array of stakeholders, read consultation and policy documents, and even went to various nuclear industry events across the country. My emerging findings indicate how distinctive a current new nuclear investment is from the previous construction programmes in the UK. This investment is led by multinational nuclear vendors, not by a nationalized industry, but in a close 'joined-up' collaboration with various governmental bodies, industry companies, and other stakeholders, both on the local and the national level.

n contrast to the heated debates in the 1980s, current consultations often fragment and exhaust the public. Political debates seem to turn into legal-procedural disputes. During my research, I see a new era of doing megainvestments unfolding. It's a day-to-day excitement as a researcher, but also a challenge to study such a many-folded issue. I need to pull my diverse academic background in sociology, economics and environmental science all together. I find the overall profile of the School, and especially geography, a fertile background to do such an interdisciplinary research.





Anthony Lamur - Deformation, Microstructures and Volcanology; Earth, Ocean and Ecological Sciences. Volcanic domes mechanics: glass-rich magmas fracture and healing.

started my PhD in Liverpool in July 2014 after completing my master's degree in magmas and volcanoes physico-chemical properties at Michigan Technological University, USA and Université Blaise Pascal in Clermont-Ferrand, France.

My current research focuses on physical parameters controlling glass-rich magmas fracturing and healing. Based in the experimental volcanology lab in the Earth, Ocean and Ecological sciences department, I conduct high temperature experiments on both natural and synthetic glass rods. My first aim is to understand the fracturing of different glasses, and how the rate at which a deformation is applied controls this phenomenon. My second aim to investigate how glass relaxation helps fractures to weld back together/heal. I would also like to look at what other physical/chemical processes can have an impact on the kinetics of the fracture propagation and healing phenomena.

Because volcanic domes disruption can lead to dramatic explosive eruptions, will hence try to upscale my lab-based result to the field. I will focus on Ceboruco volcano in Mexico, and more specifically on two lava domes complexes. I aim to do so by looking at how the degree of fracturing/healing of natural rock affects the permeability of these structures.

My training in thermography and Matlab skills in image processing have also brought me the opportunity to develop routines to deal with thermal and numeric images.



Suraya Hilmi Hazim - Deformation, Microstructures and Volcanology; Earth, Ocean and Ecological Sciences. Linking Plutonism and Volcanism: Understanding the development and evolution of large magmatic bodies,

y PhD research aims to provide a deeper insight into the relationship between plutonism and volcanism using a combination of different approaches, both in the field and in the lab. I will be using analogue models to observe the formation of plutons, which will be complemented by thermo-mechanical numerical models and further informed by field observations. This multi-approach study will focus on the mechanisms which permit intrusions of molten rock to accumulate in the crust. This in turn will provide insight on how material accumulates beneath the Earth's surface to form large reservoirs of molten rock with the potential to feed large magnitude volcanic eruptions.

'elestine Nwojiji - Environmental Change; Geography and Planning. Ecological functioning of planktonic communities during the warm periods of early *Eocene and Quaternary.*

hold a B.Sc. (Hons) - Geology; M.Sc. - Sedimentology and Biostratigraphy from Ebonyi State University, Abakaliki-Nigeria and joined the Environmental Change working group in January, 2015 for doctoral research.

y research is exploring past periods of warm climate, using microfossils to quantify the ecological functions of planktonic traits across these past warm climate extremes. My study intends to integrate biostratigraphy and biogeochemical proxies as well as use a tool that allows the relative importance of different planktonic traits to be quantified. This will enable me to study the feedbacks on planktonic communities during the past hyper thermal events. I also intend to use modelling tools to integrate my data at wider spatial scales, test hypotheses about the drivers of these trait changes and speculate about the impact of future change.

he research is funded by Ebonyi State Government, Nigeria under the supervision of Drs Fabienne Marret-Davies and Alessandro Tagliabue.





lina Pelikh - Modelling, Population & Geocomputation; Geography and **Planning.** Transition to adulthood in Britain.

am a first year PhD student in Demography. I hold a BSc and MSc in Economics from the Moscow State University (Russia), as well as an MSc in Demography from the University of Rostock (Germany). Before coming to the UK to conduct my PhD research I graduated from the European Doctoral School of Demography (EDSD).

y thesis focuses on the transition to adulthood in Britain and decision-making at an early stage of the life course under different settings. The British pattern of the transition to adulthood is usually described as an 'accelerated' one with entry into jobs and adult responsibilities straight after leaving full-time education considered as being the norm. The strategic shift to a neoliberal welfare regime under Margaret Thatcher's government and the subsequent housing crisis led to an increase in socioeconomic inequalities and to the diversification of living arrangements. But at the same time during recent decades young people gained the opportunity to benefit from globalisation by finding their own unique way to cope with the increased uncertainty. The British media, though, usually only focuses on the image of 'frustrated', 'lost' or 'disconnected' generation when it comes to young people.

herefore, I hope my project will improve our understanding of pathways to adulthood of British young adults and the evolution of the trajectories over time. I want to move beyond the 'one life-event-at-a-time' approach and adopt a holistic life course view by analysing changes in a number of interrelated life domains of individuals; their employment and education, partnership and family, housing and residential careers. The project is not limited by the investigation of changes that occurred across several birth cohorts, but also takes into account the socioeconomic and ethnic background of young people. In order to answer my research question I will apply techniques of sequence analysis and multistate modelling to the British Household Panel Survey (BHPS) and Understanding Society (UoS).

All aboard Marisa for the Mersey River Festival

Thousands of visitors stepped aboard the University of Liverpool's research vessel, Marisa, to find out about the science of the ocean as part of the International Mersey River Festival weekend, 5-7 June.

The Mersey River Festival is one of the key highlights in the city's calendar and this year an estimated 400,000 people flocked to the waterfront to visit ships of all sizes and to enjoy live music acts and events.

or the second year running, the University's research vessel, Marisa, and scientists from the School of Environmental Sciences and the National Oceanography Centre invited visitors aboard to explore the science of the sea and find about some of the creatures that live in the docks.

Science of the sea

onathan Sharples, Professor of Ocean Sciences and head of the School's outreach activities, said: "This year's event was more popular than ever and provided a great opportunity for us to share with visitors the enjoyment and excitement of studying the science of the sea. More than 1000 people visited us on Marissa over the weekend and learnt about the research cruises which she undertakes in the Irish Sea, as well as work we have been doing on larger research ships out in the open ocean. It was also a great way to share with people the opportunities there are at the university to study ocean science and marine biology. The team were also able to use an ocean robot, or Remote Operated Vehicle, from the National Oceanography Centre. Children were particularly keen on using this, piloting it deep in the dock to explore the remarkable life growing on the dock wall."

Marisa proved a popular attraction at the River Festiva. Visitors were treated to displays of sea creatures and impressive oceanographic equipment















Run On Sun

significant improvement to Marisa's A significant improvement for a significant improvement for a significant in provement in run entirely on her recently installed Solar Power System, eliminating the need to run diesel powered engines, generators or depend on shore supply to power-up the experiments and demonstrations and charge banks of batteries.

he 8 solar deck panels generate 800w of power to a bank of holding cells which then provide 12, 24 and 240 volts to an array of outputs around the vessel's on-board sample preparation facilities and mini-lab.

t also enables Marisa to run in complete silence whilst providing an ideal work platform for such activities as underwater noise monitoring, scanning, recording and sonar operations which are becoming more important with the increasing construction of offshore renewable energy fields.

R.V. Marisa also attracted much interest from external companies due to her unique, compact and efficient research capabilities, and it is hoped a significant portion of her maintenance costs will soon be met through engaging in external marine research projects, as well as meeting increased demand from research projects generated within the University.



A Day Out at the Beach

fter the thoughtful suggestion from Abbie Wood and ADr. Alan Boyle regarding the Marine Conservation Society's Beach clean-up events several weeks ago I decided to get out of the office and put into practice some of the things I routinely preach to students. I took myself off, on a whim, to Formby to litter pick for the morning and ended up on the BBC's North West Tonight speaking about the event. I'm still not quite sure how this happened but I did what any of us would do - I wrote a blog https:// environmentalistblog.wordpress.com/2015/05/13/from-<u>civic-design-to-civic-duty-and-having-impact/</u>. Primarily I had a think about how quickly impact can sometimes



come about. Feel free to have a look, if only to look at the embarrassing picture of me looking windswept on the BBC.

Sam Hayes

Department of Geography and Planning

Sustainable cities workshop for Russell Group China

The challenges facing sustainable cities of the future was the focus of a workshop delivered by staff from the University's School of Environmental Sciences and School of Engineering, along with colleagues at XJLTU, on behalf of the Russell Group. The workshop brought together experts from across the globe to address the challenges that cities face

due to climate change, population change and migration, food and water security, resource scarcity, environmental pollution, and low-carbon energy and transport.

iscussions aimed to identify the key research questions regarding the governance, planning and operations of 'future-proofed' cities, particularly the emerging coastal mega-cities. Sessions on Water Resources, Smart Cities and Urban-Rural Linkages were delivered by world-leading experts and helped to identify the barriers to sustainable urban growth and how these are to be overcome through targeted, collaborative research.

ohn Sturzaker, Liverpool Lecturer in Planning, who helped to organise the great opportunity to showcase our research synergies with colleagues at XJTLU on the international stage, and to situate these collaborations within a state-of-the-art, international assessment of sustainable urban development challenges."

Participants in the workshops came from the universities of Durham, UCL, Manchester Newcastle Notting have a little of the control of the con Manchester, Newcastle, Nottingham, LJMU, Lisbon, Peking, Tongji, East China Normal University, Hong Kong, XJTLU and South China University of Technology as well as the Chinese Ministry of Housing and Urban-Rural Development and the UN Development Program. The workshop also provided a stage for postgraduates from the Universities of Liverpool and Lancaster and their partner SMEs in the Centre for Global Ecoinnovation (CGE) to evidence how universities can effectively work with businesses in promoting sustainable economic growth through innovative research into new products and services that are energy- and resource saving.

att Fulton, project manager for the CGE, says: "It was great to be able to share with delegates from the UK and overseas the work of the CGE. Our postgraduates and business partners are providing real, tangible examples of innovation across the triple helix of HEIs, businesses and regional government, and we were able to discuss how this model may be rolled out to our international partner organizations."



Delegates at the Sustainable Cities workshop

Awar

Best Paper on Spatial Analysis awarded by CASA at GISRUK 2015



Alekos Alexiou won the "Prize for the Best Paper on Spatial Analysis" for his research; The Role of Geographical Context.

A lekos Alexiou, Spatial Planning & Impact Assessment; Geography & Planning, won the "Prize for the Best Paper on Spatial Analysis" for his research The Role of Geographical Context in Building Geodemographic Classifications, presented in the Annual GISRUK Conference held at the University of Leeds, 15th - 17th April 2015.

This is the first part of a wider research project regarding the geographic sensitivity of socio-spatial patterns, by examining the case studies of Liverpool, Manchester and Leeds, along with some preliminary findings of a more generalised approach of socio-spatial pattern homogeneity. This was extended in a talk given at the Association of American Geographers Annual Meeting in Chicago, April 2015, and examined the degree of homogeneity within neighbourhood typology created over a range of scales across England.

The aim of this wider research is to produce geographic extents that maximise local socio-spatial variation. It is essentially a MAUP approach which could be used in various studies regarding population dynamics.

Guild Awards 2015

Now in its seventh year, the awards recognise groups and individuals who have gone above and beyond to have a positive impact on the student experience. Over 500 nominations poured in to support individuals and groups who work tirelessly to make University life better. Among the winners who picked up awards on the night were;

Teacher of the Year (Science and Engineering)

Dr. Jonathan Green (Ecology and Marine Biology)

Johnathan has true passion for his course and always exudes a professional approach to problems. He focuses on making sure that his students' learning is at the forefront of all his work.

Course Rep of the Year (Science and Engineering)

Ruby Temple Long (Yr 2 BSc Marine Biology)

Ruby is a friendly, bubbly character who has helped to bridge the gap between lecturers and students. She goes above and beyond to make sure all student voices were heard in her Environmental Sciences SSLCs.

Poster Day 2015, Faculty of Science and Engineering First prize to SoES Postgraduate

Judging at this year's Poster Day, 26th March and Poster Day Online, 20th April - 9th May, resulted in a winner from the Faculty of Science and Engineering, SoES.

hil Sapiro, won First Prize for his poster on Geodemographic Analysis of British Jews (supervisor: Paul Williamson).

ighly commended posters were by David Clare (Leonie Robinson), Juliane Wihsgott (Jonathan Sharples) and Catherine Wilkinson (Bethan Evans).

oster Day Online highly commended posters: Xinkai Wang (Ian Mell) and Oliver Lamb (Yan Lavallée).



A winning poster by Phil Sapiro at the University Poster Day, 26th March 15

Best Student Paper Award, MARE Conference 2015

Madeleine Gustavsson, Power, Space & Cultural Change; Geography and Planning, won the 'best student paper' award for her paper entitled: "Exploring non-economic aspects of fisheries' sustainability through the cultural construct of the 'good fisher'", at this year's Centre for Maritime Research Conference: People and the sea VIII, in Amsterdam, 24-26 June 2015. Madeleine was presented with her prize at the coference dinner attended by over 200 delegates.



Prize money and a lovely 'fish' tray

PGR Conference Prize winners



Congratulations to all winners – well done!

There were 78 presentations followed by 83 interviews; PhD students and academic staff had time for discussions, constructive criticism, and social interaction. Almost all presentations were well prepared and delivered; many PhD students presented publishable results. Most sessions had around 25 participants; in some sessions many more. Dr. Janine Kavanagh gave an inspiring keynote talk – we learned how gelatine can be used to better predict volcanic eruptions! The panel discussion on Life after the PhD was very well attended (over 60 participants); colleagues inside and outside of academia shared their experiences of transition from PhD studies to post-doc life. The PGR committee also awarded prizes for the best presentations.

The winners of the best paper awards were:

First prize (science): Oliver Lamb

First prize (social science): Sophia Kochalski

Second prize (science): Louise Hawkins

Second prize (social science): Thea Wingfield

Highly commended (alphabetical order):

Adedamola Aderiye John Bedford Jennifer Evans John Farrell Peter Fawcett Suraya Hilmi Hazim Anthony Lamur



Charter for women in science

Recognising commitment to advancing women's careers in STEMM academia

SOES Athena SWAN - bronze award application

t is with disappointment that the SOES Athena SWAN committee reports that the School's bronze ward application submitted in November was unsuccessful. Feedback received assures that we are on the right track but need to express the good work we are doing in a way that meets with the thinking of the Athena SWAN assessment panel.

We have taken these points on board and propose to put in a new updated application in November.

Reach for the stars



Maggie Aderin-Pocock (left), Kate Black, LivWISE (middle), Fabienne Marret-Davies (right) at the lecture event

he LivWISE Guest Lecture event on the 30th of April 2015 had the pleasure to welcome Dr Maggie Aderin-Pocock who gave an inspiring lecture on How a space-obsessed schoolgirl battled the odds to become a top scientist! This free event, at the CTH, scheduled at 5pm, attracted about 250 people, from school pupils to more senior audience. Maggie, in her humble way, communicated with passion and humour that despite obstacles, the sky is no limit for any girl who wishes to study science-based subjects. Following her lecture, Maggie gave numerous selfies and autographs to her fans, including us.

Any news you would like to share with the School, of work being done, grants won, new staff (including postdocs), retirements, facilities, social events or anything else, please submit an article along with any images to Suzanne Yee, (suzanne@liv.ac.uk) for inclusion in the next edition.

SOES post graduates go 'star' gazing! - LivWiSE Public Speaking, Research Communication and Media Masterclass

ivWiSE (Liverpool Women in Science and Engineering) hosted a very successful event in May, which kicked off with an evening seminar given by space scientist and TV 'Sky at Night' presenter Dr Maggie Aderin-Pocock, MBE. This was followed the next day by a masterclass workshop covering the topics of public speaking, research communication and presenting yourself and work to the media.

The SOES Athena SWAN committee funded two people to attend. The successful duo were post graduates, Suraya Hilmi Hazim and Gemma Jerome. Read on for a summary of their experiences and thoughts of the day.

Communication, Inspiration, Passion!

Suraya Hilmi Hazim, PhD Student, SoES

am not the biggest fan of public speaking. Every single time I am asked to speak in public, my voice cracks, my palms start sweating and my legs turn to jelly. So when I got an e-mail from Athena SWAN saying that they would support a female PGR to attend a masterclass for women in science to learn how to communicate with confidence, I was interested. If there was a class to help me communicate my ideas better, I was definitely signing up for it.

On the 1st of May 2015, I found myself in the middle of CPD Suite in the Central Teaching Hub surrounded by some amazing female scientists. Their passion for science was infectious. I found myself happily talking about my research to these people I've just met in no time. If I had any doubts about my decision to join in on this workshop, I'm pretty sure those doubts were quickly forgotten over the first cup of coffee.



The Story of a Media Opportunist: A Personal Account

Our first session was with Dr Maggie Aderin-Pocock, a space scientist who is no stranger to being in the limelight. The newest presenter on BBC's longest running TV show "The Sky at Night" shared with us how she got into the world of science and later on, media. She shared with us her academic ups and downs of being a scientist, as well as the joys of motherhood throughout her journey as a scientist. Her stories about how she brought her daughter everywhere she went reminded me very much of how my own mother (a geophysicist, teaching back home) took me with her on all her class fieldtrips. In this session, we were told to make the best of every opportunity, no matter how small because they may just turn out to be something much bigger.

Telling Science Stories Simply

Next we had a session with award-winning science producer and author, Paul Bader. Armed with examples from local newspapers and scientific journals, we delved deeper into the world of effective science communication. Here are a few lessons we picked up:

Lesson #1: Think Like The Audience

We scientists are very much used to writing things for a scientific audience that it has become second nature for us. Scientific articles, in the eyes of the regular Joe (or Jane), may look like a labyrinth of complex ideas meshed in blocky paragraphs, sprinkled with scientific jargon, separated by the occasional fancy chart/ figure. While this may seem to be appealing enough to a fellow scientist, this could easily put off audiences who may not be of a science background. It would be helpful to ditch the science goggles every once in a while to look at things from a layman's eyes. If this doesn't work, get your article proofread by someone who fits the description of your target audience and get their opinion on it.

Lesson #2: Your Story

Paul pointed out how a lot of science news articles only feature the scientist as part of the background. He encouraged us as scientists to put ourselves into the

articles to give the articles a human touch. The audience is more likely to engage with an article that they could relate to on a more personal level, rather than a run-of-themill (read: boring, robotic) science article.

Lesson #3: Put Your Key Information First

he key to being a successful science communicator is to always have your audience on the hook. Structure your words in a way that the audiences will be consistently looking forward to your next idea and the one after.

Workshop: Media Release

n this workshop, we were given 45 minutes to come up with an attention-grabbing headline, a compelling first paragraph and a personal quote to round off the miniarticle about our individual research projects. We had a few helping hands to guide us through this session. There was Paul and Maggie, as well as Barbara Govan (coowner of Screenhouse). 45 minutes may sound like a pretty long time, but most of us had trouble just starting things off. Paul pointed out that this mind-block of ours was mostly because we were attempting to compress all our research into a single paragraph, which is a pretty gargantuan feat. This exercise helped us to strip our projects down to the bare essentials instead of the many parts of the research that bogged down the audience's attention. We managed to think of our projects as its most basic core and this eventually helped up to re-think the ways of structuring our projects in presentations to keep the audiences as engaged as possible.

Workshop: Confident Performance

fter lunch, we were joined by the lovely Victoria Pritchard. Being an actress, Victoria has graced the screens and stage with her presence. As a voice coach, she has helped many scientists to find their voices. Instead of spoon-feeding us with tips on how to better engage the audiences in our presentations, Victoria took a very hands-on approach. She made us all get up on our feet for an exercise in delivering ideas confidently with the most impact. As part of this exercise, we were given metaphorical ideas to throw around in the form of tennis balls. Through this exercise, we learned the importance of having good eye contact with the audience as well as how not to overwhelm the audience with information (i.e. By throwing multiple tennis balls at once into the audience.)

Workshop: On-camera Presentations

he organizers saved the best session for last. At the end of the day, we were given the opportunity to try our hand at presenting our research on camera. People don't usually realize how they come across in a presentation simply because there isn't a way to watch yourself present as you present something. Fortunately for us, we were given not one, but three chances to record our presentations on camera. Each recording was then played back to the participants, followed by some feedback by the speakers to help improve on the next recording. Naturally, most of us were not feeling too enthusiastic about being on camera for the first time. Luckily for us, the speakers made us start out simple – nothing too technical, just one minute of talking about our personal interests outside academia. This short minute which acted as a buffer before the two recordings on our research topics did help us to feel less intimidated in front of the camera. Being in front of the camera the second and third time proved to be a less daunting task than it was the first time. By the time our third taping was done, we became more aware of our own presenting style. Our posture, our vocal inflections, our pace – everything became clearer in the playbacks.

personally think that I shake uncontrollably and very visibly when I present. Surprisingly, when my recordings were played back to me, I realized that all that shaking did not show at all and my little audience agreed that they didn't notice it either.

University of Liverpool Press Office Presentation

e wrapped up the day with a short look into the university press scene with a presentation by Kate Mizen. We were introduced to the various channels we could reach out to if we ever needed to get word out to the university press or the mainstream press.

Overview of the Masterclass, what it was for, what exercises were carried out and what did you benefit from

Gemma Jerome, 3rd year PhD Student, Geography and Planning

The Athena SWAN Masterclass with Maggie Aderin-Pocock was a real delight for me, delivering invaluable insights into an extraordinary life reaching both academic heights and media success.

he morning centred on Maggie telling us the story of her career, and we all sat completely captivated by her candid and natural style. She was so easy to listen to and her capacity to engage people instantly in her love for science brought a kind of electricity to the room. Having not previously had a very strong interest in space science, I came away thinking I'd love to spend some time exploring online archives for the TV documentaries which have made Maggie a household name. I also came away with some real gems of wisdom about how to navigate the sometimes difficult challenges of being a female expert in the academic sector and how to more effectively communicate your message to much wider audiences through media channels. "The key is to be an opportunist wherever possible", Maggie revealed to us, finally putting to rest the niggling feeling I'd had for years that maybe I say 'Yes' too easily to all of the exciting things that come my way. By the end of the day, I was certainly glad that I'd said 'Yes' to applying for a place on this Masterclass!

ven though Maggie's CV would stir a friendly feeling of envy in any discerning PhD student, many of whom made up the audience at the University of Liverpool that morning; it was her warmth and personability that removed any doubts we had that we too might reach the level of success she so modestly retold. It was also refreshing to hear Maggie talk openly about the ways in which she has elected not to choose between a career and family, and instead has looked for imaginative ways in which her partner and daughter can enjoy her journeys into space science, travelling to distant and remote parts of the earth's wilderness to grab that all important piece of data. And for those of us in the audience who aren't yet convinced that the traditional academic route is the one for us as we step into the first chapter of our careers, Maggie also shared

with us the fact that she owns her own business and how "it's always something to fall back on." Maggie's honesty about pursuing different pathways to reach her lifelong dream destination as a space scientist really captured people's imaginations. This came through in the question and answer session afterwards as people shared the difficulties they've been having in their own careers as researchers and science communicators. It was clear that people trusted Maggie's down to earth approach, relishing the chance to be given permission to balance what's good for your career, what's good for colleagues and supervisors, and ultimately what's good for you and your wellbeing.

aggie's contribution to the Masterclass was for me the highlight of the day and I came away re-inspired to look for imaginative ways to share the findings from my research with as many different audiences as possible; including through TV, which was not an avenue of communication I felt I had much confidence in before now. Crucial to developing this confidence, as well as listening to Maggie's fantastic story and sense of wonder for her subject, was the afternoon session with Victoria Pritchard, Victoria is a trained actor and voice coach and worked with us on our 'on-camera presentation'. I have next to no experience performing on stage or on camera, so I was feeling just a little nervous! However, I needn't have worried, because Victoria is a real pro and had us all relaxed and laughing in minutes! After some warm-ups using our non-verbal communication in a group activity, I began to understand how Victoria was slowly but surely putting each of us at ease about our little nervous habits, including my own particular 'stage-fright' which is blushing a handsome shade of beetroot every time somebody asks me a question in an audience setting!

The afternoon was really very helpful in recognising each of our own particular styles of presentation; and Victoria helped us bring these characteristics to the foreground so we could send some of our nervousness



to the background. I really appreciated this approach to presenting as it meant each person had a 'best version' of their on-camera selves rather than falling into a habit of comparing themselves with somebody else.

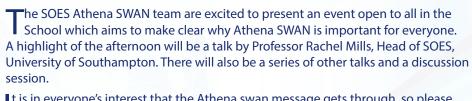
now feel much more ready to talk about my research in a way which is relevant to other people, getting to the 'good bits' and the transferable knowledge much more quickly! This is such a valuable 'take-home message' from the whole Masterclass as there is still a deficit of women moving into science as a career, and I relish the prospect of being someone who could become a role model for younger women curious and inspired to take their interest in science seriously and become an expert in their field.

In the words of Maggie Aderin-Pocock, "The time really is now to get out there and become a female expert" and change the way science is communicated, and ultimately how science shapes and changes our world.

Athena SWAN: Why it Matters to Everyone

13th July 2015, 13.30 – 17.00

Gflex Central Teaching Laboratories



t is in everyone's interest that the Athena swan message gets through, so please make every effort to attend. Light refreshments will be available.

To register for this event, visit the online store:

http://payments.liv.ac.uk/browse/extra_info.asp?compid=1&modid=2&deptid=38&catid=38&prodid=378



Guest speaker: Rachel Mills

Time	Speaker	
13:35	Sally Middleton (HR)	Introduction to Athena SWAN
13:55	Professor Rachel Mills (Head of SOES, University of Southampton)	A Sea Change In Oceanography
14:45	Lisa Barker (LivWise)	Introduction to LivWise and how to get involved
15:10	Gemma Jerome & Suraya Hilmi Hazim (Ph.D. students SOES, UoL)	Feedback from the Maggie Aderin-Pocock masterclass for women in science
15:30 – 16.30	Focus Groups – 30 minute round table discussions on the following topics:	Support for Ph.D. and PDRAs in caring roles New Staff Induction Process Staff Promotion

British Hydrological Society: Peter Wolf Early Career Hydrologists Symposium, 9-10 June 2015

arly career hydrologists from across the country gathered at the University of Liverpool for the British Hydrological Society's Peter Wolf Early Career Hydrologists Symposium, two days of stimulating presentations and poster sessions, and an opportunity for networking with contemporaries across a wide range of hydrological areas.



A day and a half of presentations and posters ranging from the Medium Term Ecohydrological Response Of A Forested Peatland To Canopy Disturbance (Rhoswen Leonard, University of Birmingham) through to The Sustainable Purification Strategy of River in Taiwan- Gravel Contact Oxidation Purification (Otto Chen, University of Bristol), with a number of speakers from the University of Liverpool. An informal poster session concluded the first day showcased studies on many quite different areas of hydrological research.

An excellent conference dinner was enjoyed by all in attendance, with the good company and high spirits epitomising the symposium and an after dinner speech by the BHS President Nigel Goody (SEPA).

ollowing the presentations of the second day, the conference field trip explored aspects of urban growth, industry and the water resource issues across Liverpool, the field trip also included more tourist-orientated attractions such as the Cathedrals, the Albert Dock and the Three Graces.

The symposium was hailed a great success by all involved, serving both as an important developmental exercise for those research students who had not previously presented and as a relaxed environment for the delegates to engage with their peers, with whom they will no doubt interact at conferences. Special thanks must go to Amy Lennard for organising the meeting.

Virtual Open Day

The University of Liverpool Virtual Open Day, with new 360's added, can be accessed from the study pages of the University home page.

http://www.liv.ac.uk/virtual-open-day/

Once on the Virtual Open Day if you click on 'Explore Campus' and then 'Select an Area' you will then see a menu for Campus, Accommodation, HSS, S&E, and HLS, if you click into the relevant area for your department, you will be able to view your specific 360's.

Virtual Open Day will be developing over time, so check back for new features and more 360s of academic department facilities.



Have you heard ... THE CONVERSATION

Note to Harvey Goldsmith: it's your music that's dead, not festivals

Mike Jones

Course Director MA (Music Industries) at University of Liverpool

http://theconversation.com/note-to-harvey-goldsmith-its-your-music-thats-dead-not-festivals-42698

M usic festivals are about to die, according to leading rock promoter and manager Harvey Goldsmith.

Speaking recently at the Hay Literary festival, he declared that it would be gatherings such as Hay, where a diverse range of interests are represented, which would come to replace live music festivals. Goldsmith thinks that there aren't any new bands surfacing to fill the stages of the UK's 900+ festivals. But what he fails to acknowledge is that there are plenty of other musical acts to replace them – perhaps more than ever.

Goldsmith is living in the past – the rock music past in which he carved himself a considerable name and fortune. His most notable achievement was the staging of Live Aid and he has long been in the business of "stadium" shows, one-off events featuring very big names. It is perhaps unsurprising that a man who has produced the Who, Queen and The Rolling Stones thinks that the festival is dying – it is true is that there are now fewer obvious "headline" acts for rock festivals than in days gone by.

To take the Glastonbury Festival as an example, the last genuinely "new" rock act to appear as headliners were Arctic Monkeys in 2007, who had broken through late in 2005 and were the dominant UK act of the following year. But this last breakthrough act was symptomatic of the turning point in the music scene.



Social monkeys

The Arctic Monkeys were a media story waiting to happen. The band emerged in exactly the period that saw the overlap between the decline of MySpace and the rise of Facebook and YouTube – in the moment when the true impact of social media became evident.

t was the contrived story about them being the first band to "make it" through the internet that gave them the media prominence that helped their first album become the fastest-selling debut in UK chart history. The point here is that this can only happen once. The future of the recording industry was already being shaped by the combination of iTunes and the iPod.

f 2007 was the year of the Arctic Monkeys it was also the year that downloads from the iTunes store started amping up. The iPod had been launched in 2001

with the slogan "a thousand songs in your pocket": the emphasis on songs not albums. This change in emphasis is what saved the major record companies from the negative impact of file-sharing – but also what damaged it mortally.

ntil the late 1990s, the recording industry was the dominant industry of music and it enjoyed its ascendancy because the key purchase made by pop music fans was the album - notably the rock album. The rock album had been born with Rubber Soul by the Beatles – their first, non-film score, album to contain all their own songs, songs that bore the introspective imprint of Bob Dylan.

he album had low production costs and enormous sales, making it – and the format it so greatly encouraged – a true money spinner. It was this moneyspinning industry that then helped to replace the ailing live performance, "variety" industry with the "live music industry" that Harvey Goldsmith entered in the early 1970s.

Fashioning stars

As Joni Mitchell put it in her 1974 song Free Man in Paris, the recording industry was, by that time, a "star-making machinery". But now this "machinery" has become generalised. Today, as old communities disintegrate and the world is increasingly globalised, individuals find their role models in celebrities - and celebrities can be sports stars or chat-show hosts or chefs or even those who are famous for being famous, as well as pop stars and film stars.

eanwhile, music users no longer have the patience to wait for rock bands to spend a few years making an album, particularly when it is individual tracks that are prized over exactly the album format through which rock stars came to be stars.

But although the days of the primacy of the rock star may be over, the live music event is far from dead, far from buckling to competition with sporting events or comedy shows, as Goldsmith seems to imply. There are plenty of live music events that function and are growing: those that involve dance music.

hat the Americans call "Electronic Dance Music" (EDM) is what the British **V** have long understood as club culture. Dance music is the quintessential music for the internet age: it is track-based, it is perfectly comfortable in a brand-driven, celebrity-obsessed culture and it draws people in their hundreds of thousands to live music events.

his summer, while the Who headline Glastonbury, David Guetta will headline T in the Park. The Who's set-list will not have changed for decades, Guetta's is likely to change every night. There is no contest. Harvey Goldsmith's business model is what is past its peak - not live music events.

