

Research news

Some prominent research activity in 2003/04:

Fragment of Empire rescued

Two tales of global warming...

...and a success story

Humble weed with superpowers

Pesticides and suicide

Vet grant

Poverty affects one billion children

Action on Research Strategy

The University's Research Strategy for 2003-8, announced in last year's Annual Report, is now being implemented. One of the key actions was the appointment of six Faculty Research Directors in autumn 2003.

These individuals are senior researchers with strong research reputations, and are working closely with the Deans, the Pro Vice-Chancellor for Research and the Director of Research, Enterprise and Development to deliver the University's vision for research within the faculties.

The Research Directors also form the core of the University's Research Committee. In 2003/4 the work of this committee focused on a comprehensive series of visits to all academic departments. The twin aims of the visits were:

- to gain information about the current state of research in the University and the issues facing departments in the run-up to the 2008 Research Assessment Exercise;
- to examine how each department is approaching the University's long-term goal of reinforcing its position as an internationally competitive, research-intensive university.



Fragment of Empire rescued

An all-but-forgotten aspect of British colonialism has been rescued and chronicled by Dr Robert Bickers in the Department of Historical Studies. His book, *Empire Made Me: An Englishman adrift in Shanghai*, is a biography of Maurice Tinkler (1898-1939), a British member of the Shanghai Municipal Police. The narrative broadens to examine British power in Shanghai, and the city of Shanghai itself during the inter-war period, when at least 15,000 British citizens lived in China, excluding Hong Kong.

Following a period of research stretching over a decade and funded by a series of grants, Dr Bickers was able to write the book after receiving a Leverhulme Research Fellowship.

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Sliding to a stop

The Caribbean region is becoming a safer place to live, thanks to an initiative set up by a member of staff and his research assistant in the School of Geographical Sciences.

Away from the beach resorts, the inhabitants of the poorest housing on steep slopes in St Lucia live with the day-to-day threat posed by landslides, which are sometimes fatal and always destructive. But the communities themselves are now becoming equipped with the means to prevent these local catastrophes, thanks to Professor Malcolm Anderson and his PhD student, Liz Holcombe.

Professor Anderson was co-author in 1997 of an Overseas Development Administration design manual for tropical slopes, and developed software (called CHASM) to help estimate the effects on slope stability of factors such as storms, slope characteristics and ground water levels. But he knew that technical assistance only went part of the way towards a lasting solution.

‘There was a huge opportunity to better connect with people,’ he explains. ‘There are plenty of people in the government with many of the skills necessary to tackle landslide risk reduction issues. And these regions can’t always afford to buy in consultants.’

So why St Lucia? ‘I knew the political structure there, and knew that it had the greatest chance of success – and of all the places I’ve worked in around the world, in terms of need it was pretty high up there.’

Areas of poor housing in the Caribbean such as those in St Lucia are beset by an increasing number of small-scale local emergencies caused by population pressures. These recurrent events, such as landslides, tend to get overlooked in favour of dealing with the aftermath of big disasters. And what little action is taken can often be inappropriate: ‘Elsewhere, I’d seen large amounts of money spent and people being moved from areas of risk by political regimes, without any effective investigation,’ he says. ‘We had to find solutions that were appropriate, sustainable and delivered to people on the ground.’

And the ground is exactly where the work needs to be done – on it, in it and beneath it. Slope stability is a central issue for these communities, and one that crosses disciplines: it affects houses, health, infrastructure, water supply, and planning. Accordingly, Malcolm and Liz devised the MoSSaiC (Management of Slope Stability in Communities) programme and gathered representatives from eight government ministries and agencies on St Lucia to form the first MoSSaiC management committee. Its priorities were to identify government staff and community members who could develop and deliver a landslide risk reduction programme, and to set up field teams to work on those projects. The involvement of the government was crucial: ‘For the work to be followed up,’ explains Liz, ‘it had to become embedded in policy.’

The experience of working on the MoSSaiC project has also become embedded in their own lives during its fast-moving first year. ‘I really enjoy linking the science of what we do with government capabilities,’ says Liz, ‘and seeing that come together in the communities. Working with people day to day has been incredibly rewarding.’



Above: The aftermath of a landslide in Skate Town, St Lucia.

Left: Professor Malcolm Anderson and Liz Holcombe of the School of Geographical Sciences.



MALCOLM ANDERSON

‘Of all the work I’ve done, this has had the greatest impact on me. It’s created opportunities to share our knowledge with people who are vulnerable.’

Professor Malcolm Anderson

Above: The St Lucia community of Skate Town was chosen for a pilot of the scheme (its name refers to the treacherousness of certain footpaths because of landslides). The success of the measures there means that the rest of St Lucia, and subsequently the Eastern Caribbean, will begin to implement the MoSSaiC model.

Professor Anderson agrees. ‘Of all the work I’ve done,’ he says, ‘this has had the greatest impact on me. It’s created opportunities to share our knowledge with people who are vulnerable. And we’re learning too – the most vulnerable of communities work with us and tell us their priorities; that has helped us to realign our priorities.’

After just some 12 months, the results speak for themselves. At the community level, there is already capacity-build with the co-sharing of appropriate slope drainage measures. At the technical level, new low-cost slope drains have been constructed, and housing areas and main roads have been divided into zones according to landslide risk. At the government level, MoSSaiC has been formally approved by Cabinet, and training manuals and courses are up and running.

‘The MoSSaiC programme is all about vertical integration from Government to community, combined with horizontal integration as ministries co-operate with each other,’ says Professor Anderson. ‘And that’s what we’re seeing in St Lucia now. This means that the framework is in place for the Caribbean region to put things into practice in the near future.’

It is clear that every step in the MoSSaiC strategy is aimed at a sustainable solution – hence the absence of contracts. ‘Normally, when a contract ends, the partnership ends and there may be no lasting benefit,’ says Liz. ‘Our work is based on relationships and trust, and focused on the longer term.’

‘As an academic, you can create a long-term partnership, in which your university is a component,’ says Professor Anderson. ‘These are new ways of thinking about how universities can connect with partners around the world. In doing so, we can help transform the lives of individuals, who in turn can set new research agendas for universities.’ □

Research news continued



JONATHAN BAMBER

Two tales of global warming...

Research by several academics in the School of Geographical Sciences paints a worrying picture of the effects of climate change.

In autumn 2003, a team of scientists from the UK and Argentina – including Dr Tony Payne – reported in *Science* that ocean warming has thinned the Larsen Ice Shelf in the Antarctic by 18 metres over the past decade. Vast quantities of ice-cold water have consequently been released into the world's oceans. The findings suggest that Antarctica may be more sensitive to the effects of global warming than was previously thought.

In December 2003, at a United Nations conference in Milan, Dr Jonathan Bamber argued that global warming could cause Western Europe to get colder, because the melting Arctic ice cap is cooling off the warm ocean current that is largely responsible for Europe's mild weather.

...and a success story

Dr Jim Hall and Dr Richard Dawson in the Department of Civil Engineering have developed a new method of assessing flood risk, using the Environment Agency's National Flood and Coastal Defence Database

to examine the reliability of flood defences in England and Wales. And government bodies have been quick to take it up.

The Environment Agency has adopted the Bristol method to provide the most reliable estimate yet of potential damage due to flooding in the UK; the Department for Environment, Food and Rural Affairs is using the results to argue for greater investment in the nation's flood defences; and the model has been modified to analyse climate and socio-economic change for the Office of Science and Technology's Foresight Flood and Coastal Defence Project.



APEX NEWS & PICTURES

A more detailed method, based on work by Professor Paul Bates in Geographical Sciences, is helping to determine long-term strategies for the Thames estuary flood defences.

The University's leading position in flooding research in the UK has recently been strengthened by the award of £5.7 million from the Engineering and Physical Sciences Research Council, the Natural Environment Research Council, the Department for Environment, Food and Rural Affairs, the Environment Agency and others to a consortium of universities being led by Professor Ian Cluckie, director of the University's Water and Environmental Management Research Centre.

Above: Severe flooding in Boscastle, Cornwall in the summer of 2004.

Research news

Right: Thale cress
(*Arabidopsis thaliana*).



TIM COLBORN

Humble weed with superpowers

Thale cress – a common roadside weed which was the first plant to have its entire genetic code read – is yielding some surprising benefits in the School of Biological Sciences.

Dr Colin Lazarus and colleagues have put three genes – two from algae and one from a fungus – into Thale cress (*Arabidopsis thaliana*) to produce a plant with a high content of the healthy polyunsaturated fatty acids found in oily fish. Very long chain omega-3 and omega-6 fatty acids are known to reduce the risk of heart disease and relieve symptoms of rheumatoid arthritis. They may also improve brain function and mood and help to combat diabetes.

Dr Claire Grierson and colleagues at Bristol and Oxford universities have discovered a gene in thale cress that helps it cope with stressful situations such as disease or poor environments. The gene, called OXI1, and other similar genes may eventually have a part to play in medical treatment for humans.

Pesticides and suicide

Developing countries have different patterns of self-harm compared to industrialised countries – and these patterns increase the likelihood of fatality, according to Professor David Gunnell in the Department of Social Medicine and the Sri-Lanka-based Dr Michael Eddleston, in an editorial published in the *International Journal of Epidemiology*, edited in the Department.

In developing countries where a large proportion of the population are subsistence farmers, ingesting agricultural pesticides is a much more common method of attempted suicide than overdosing on prescription drugs. There may be up to 300,000 pesticide suicides annually in the China and South East Asia region alone.

Studies show that suicidal impulses are often short-lived and that making the means of suicide less available can 'buy time' until the impulse passes. Professor Gunnell and Dr Eddleston suggest ways to reduce pesticide suicides in developing countries, including restricting availability, licensing, storage guidelines and improving public education. But pesticides are a multi-billion-dollar business, and international organisations have taken little action.



Vet grant

The University's Vet School has been awarded £3.6 million to investigate what triggers infections and allergies in farm animals. The funding is Bristol's portion of a £21.5 million grant, made by the Department for Environment, Food and Rural Affairs and the Higher Education Funding Councils and shared between only four UK institutions.

Over the next five years, Professor Tom Humphrey and Dr Mick Bailey from the School of Clinical Veterinary Science will lead a research programme to look at how the environment – including cleanliness, stress and airborne bacteria – affects an animal's susceptibility to disease. Each project includes collaboration with other research institutes and universities, such as the Institute of Animal Health, the Institute of Food Research and the Health Protection Agency.

The grant will also foster research training at veterinary schools by providing funding for postdoctoral assistants, PhD studentships and sixth-form studentships.

Poverty affects one billion children

A study published for UNICEF by the University's Townsend Centre for International Poverty Research and the London School of Economics has produced the first scientific measurements of child poverty in the developing world.

The report shows that over one billion children – more than half of those living in developing countries – suffer from severe deprivation, and that 674 million – over a third – are living in absolute poverty.

'Many of the children surveyed who were living in absolute poverty will have died or had their health profoundly damaged by the time the report is published,' said co-author Dave Gordon, Professor of Social Justice at Bristol. 'Many others will have had their development so severely impaired that they may be unable to escape from a lifetime of grinding poverty.'



The report, which used the largest and most accurate sample of children ever assembled, concludes that anti-poverty strategies must respond to local conditions, and that blanket solutions will be unsuccessful. Greater emphasis needs to be placed on improving basic infrastructure and social services for families, particularly regarding shelter and sanitation in rural areas.

Left: Students and their patients at the Vet School.

Above: A picture from the cover of the report.