



# GEOGRAPHY MATTERS

Post 16 and HE Committee

Spring 2010

This edition of our newsletter, *Geography Matters*, provides ideas, thoughts, updates and classroom resources which will be useful for new A-level specifications and in particular for fieldwork requirements. Emma Rawlings Smith and Viv Pointon offer us some perspectives on climate change; Alan Marvell unravels geography in the new Diplomas; Helen Hore and Iain Palôt share their experiences; Gill Miller discusses global health; and Richard Kotter shares his personal views of 'A Different View'.

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**Geography Matters** is the newsletter of the Geographical Association (GA) Post-16 and Higher Education Phase Committee and the University & College Union (UCU) Geography Section. The views expressed are those of the authors and do not necessarily represent those of the GA, the Committee or UCU.

The Post-16 and HE Committee promotes and safeguards the study and teaching of post-compulsory sector Geography. If you work in a school sixth-form, college or university and would like to join the Committee, please contact us. NQTs and student teachers are especially welcome. To find out more about the work and activities of the Committee, see the Post-16 and HE area of the GA's website, [www.geography.org.uk](http://www.geography.org.uk).

**Geography Matters** is now accessible online and in colour at [www.geography.org.uk/11-19/post16andhe/](http://www.geography.org.uk/11-19/post16andhe/), reducing the need to produce an environmentally-hostile version!

This edition of **Geography Matters** has been edited by Gill Miller, [g.miller@chester.ac.uk](mailto:g.miller@chester.ac.uk).  
The GA is based at 160 Solly Street, Sheffield S1 4BF.

## An arid discussion while others feel the heat?

Viv Pointon, Chair, Post-16 & HE PC.

So climate change is in the melting pot – or, at least some of it's proponents at UEA. Are the naysayers are in the ascendant? Well, maybe. The government is pulled up for careless wording of advertisement, they said “will” instead of “may”.

I have taught about climate for many years. When I started out it was a case of “global warming may be occurring”. Over the years this became “global warming is occurring and we may be causing it”. Some time in the last decade or so this became “global warming is occurring and we are responsible”.

There are a couple of graphs that convinced me<sup>1</sup>. They were published originally, I think, by the Hadley Centre and they separate natural from anthropogenic forcing. Without our voracious appetite for fossil fuels, rice, meat and all the other GHG-producing needs, the climate would probably be drifting slowly into the next ice age. Game, set and match to the climate change lobby.

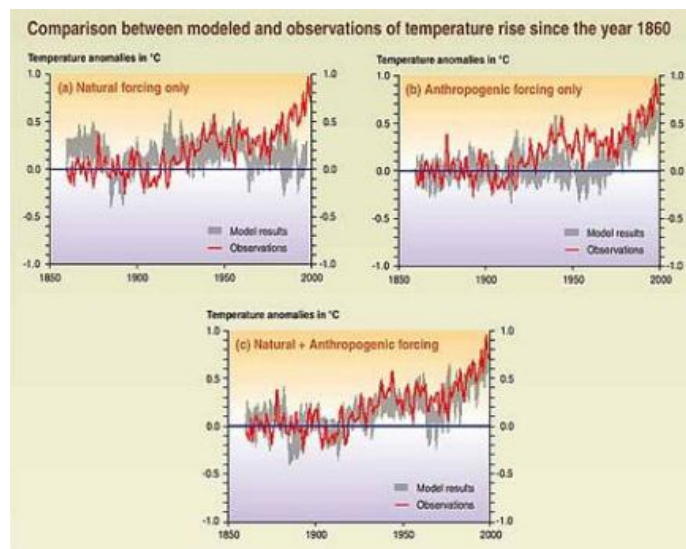


Figure 1: The red line shows recorded global temperatures, the grey lines indicate the predicted temperatures due to natural and anthropogenic forcing according to computer models.

We can't really be bewitched into imagining that all the snow we've just had – inspiring memories of 1963 for those of us of a certain age (and 1947 in my mother's case) – is sign of the end of global warming. But evidence that the relentless rise in global temperatures seems to have paused in the 'noughties' is a bit harder to explain.

And here's the rub: it's not what we know, it's what we don't yet know about the immensely complex earth's atmospheric system, and the role of the oceans in this, that matters. There are known unknowns and unknown unknowns. But the average tabloid person wants decisive knowns and does not understand that scientists cannot deliver certainty.

An A2 student told me with great confidence that global warming is a myth – she had seen 'The Great Global Warming Scandal' (Channel 4's rather poorly edited documentary) and that proved it. We have a uphill battle to teach the complexity.

Meanwhile “We run carelessly to the precipice, after we have put something before us to prevent us seeing it” (Pascal). Except some people are seeing it all too clearly. People who deal daily with drought and desertification, and the increasing struggle to find enough water to grow sufficient crops. And the natural world adapts or not on the relentless Darwinian conveyor belt.

<sup>1</sup> See [http://www.columbia.edu/~fhz2102/kyotofuture/images/global\\_chart5.jpg](http://www.columbia.edu/~fhz2102/kyotofuture/images/global_chart5.jpg)

At the GA Conference this year, the Post-16 and HE Phase Committee are focusing on arid environments. This theme has an enhanced presence in the new A level and GCSE specifications. In two lectures and a workshop on Friday 9<sup>th</sup> April we examine the impacts of climate change in fragile dry environments and suggest ways to teach this part of the curriculum.

Amber Waite from Kew Gardens will talk about the consequences for biodiversity, and Nigel Winter (The Vegan Society) and Jenny Hill (University of the West of England) will consider the impacts on food security and water supply.

So let's avoid the ill-informed arguments about global warming and climate change and concentrate instead on what is actually happening.

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## Global climate change and water supplies: the winners and losers

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Mention Copenhagen, Britain's 'Big Freeze', the greenest ever Winter Olympics and melting Himalayan glaciers and we are faced with an alarmist media portrayal of failed political negotiations, extreme weather events and questionable scientific research. What are we actually being told? Climate change myths *are* prolific; climate change *is not* happening. Others are telling us that rapid climate change *is* occurring and the human race *is* doomed. The global increase in temperature of 0.7 °C, over the last century is a result of an increase in greenhouse gases and water vapour in the atmosphere. Oceans have absorbed 80% of all heat added to the climate system. This increase in sea temperatures in the Indian Ocean is increasing rainfall levels in the Sahel, Africa. An increase in tropical sea temperatures is fuelling more extreme low pressure weather events, including Cyclone Nargis in 2008.

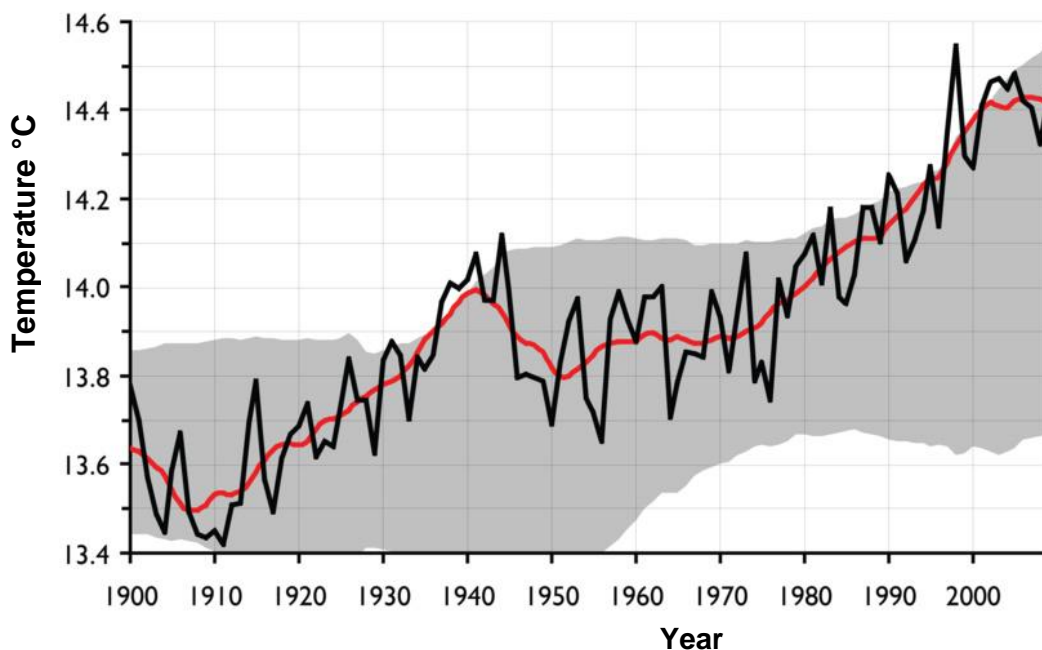


Figure 1: Annual global temperatures (The black line is the annual global mean. The red line is the 10-year). Source: <http://commons.wikimedia.org/wiki/File:Temperature1900-2004.jpg>

### **How has the past climate changed?**

It is not only modern society which has been affected by a changing climate system. The Mayans, Anasazi and Khmer societies all suffered from decreased rainfall and a shortage of water; which lead to the abandonment of these ancient civilizations. Angkor, a city of one million people, located in modern day Cambodia, was abandoned by the Khmer empire as a consequence of severe droughts across mainland south-east Asia in the 1400s. The canals and reservoirs ran dry and the farms could no longer supply food to feed the people living in the city.

### **Are we facing a modern water crisis?**

The rapid population growth of the late 20<sup>th</sup> Century has put significant pressure on stressed environments, especially those found in semi-arid and arid areas. The limited storage capacity within marginal natural systems fails to protect them against short-term external shocks such as low rainfall, water shortages and drought conditions. 1.2 billion people have no access to fresh water, mainly living in the 20 or so water scarce countries.

### **Why do people lack access to fresh water?**

1. Climate change. As the temperature of the world increases, so the amount of water stored as glaciers and snowpack is reduced. This results in less stored water available for the densely populated lowlands.
2. Rainfall changes. Expected rainfall patterns have changed, rainfall events are becoming more variable and more intense. The heating of the world's oceans has fuelled low pressure systems and extreme weather events with much more intense rainfall becoming the norm.
3. Water stress. A rapid growth in population and level of development in countries such as India and China are putting more stress on water resources.
4. Irrigation. Agriculture uses 70 per cent of all freshwater supplies, some of which is poorly managed resulting in salinisation and land degradation.
5. Distribution of surface water. The over-extraction of water from rivers and lakes has not only seen a reduction in water levels, but has also resulted in the concentration of water pollution. Rivers like the Colorado River in America and the Yellow River in China now run dry.
6. Groundwater. Fifteen times more water is being extracted from groundwater sources than is being replaced, at a global rate of 30 billion gallons a day. Cities like Mexico City have drawn groundwater levels so low that they now need to import water from outside the drainage basin.
7. Big business. The privatisation of water companies has meant that in many countries municipal supplies are more expensive than bottled water. The poor are most water insecure.
8. Foreign debt. As agricultural products are being globally traded in order to pay off foreign debt, hidden water is being bought by rich countries from water-poor countries for instance 99 per cent of apple juice consumed in America originates in China.

9. Urbanisation. As more people live in cities than rural areas, there is a greater strain on local water resources. Conflict also occurs as the water supplies often come from the same source as the irrigation water required for the production of food.
10. Industry. Countries with heavy industry and manufacturing often pollute the very water resource that people rely on. Twenty million people depend on the polluted and shrinking Lake Chad, in Africa for an income, food and much needed water.

### Water crisis in Yemen

The Global Humanitarian Forum, headed by former UN Secretary General Kofi Annan, reported in 2009 that global warming was causing 300,000 deaths each year. One of the most threatened countries being Yemen, a southern Arabian country with a young population of 23 million. Its name means paradise, but for some people, living in Yemen is far from ideal. Today, 7.5 million Yemenis are suffering from chronic hunger and this condition can only get worse, much worse. Why should this be so?

Yemen, a desert nation, receives between 50 and 100 mm of rainfall in the lowland arid lands and up to 800mm in the middle highlands where half the population live around the capital of Sana'a. Rainfall is normally expected in April when planting occurs but this is being delayed and rainfall is occurring at higher intensity over shorter periods of time. The arid environment is recharging Yemen's 21 aquifers at a slower pace than the amount of water being drawn. Ninety per cent of Yemen's groundwater is currently used to irrigate high-value khat, a mildly narcotic leaf, chewed by half the male population. Unlicensed drill rigs are creating ever deeper well shafts in an effort to reach fossil water. Resource exploitation has left the country with nothing. It is estimated that the wells in Sana'a will be empty and the last drop of oil will be gone in five years time.

### Greening of the desert

Climate change does not always to lead to drought, land degradation, desertification and salinisation. If we take a look the Sahel grasslands spanning the African continent from the Atlantic to the Indian Ocean, south of the Sahara, we can see that recent climate patterns have altered quite significantly.

The north-east African droughts of the 1970s and 1980s ended after the drought year of 1984 and recent trends have seen an increase in rainfall levels and variability. Satellite images of the area have in the last two decades shown a significant blooming of the desert. 19 000 square miles of savanna in Niger are more vegetated today than 20 years ago.

The mechanisms of a real increase in Sahelian vegetation are of course complex; they include variations in global weather systems, the modification of land management and agricultural systems, altering resource use and population changes. The oceanic currents which affect sea-surface temperatures undoubtedly impact on rainfall received in the Sahel. The global trend of rural-to-urban migration is as significant in Africa as anywhere. A decline in the rural labour force reduces the area of land under cultivation, consequently leading to the greening

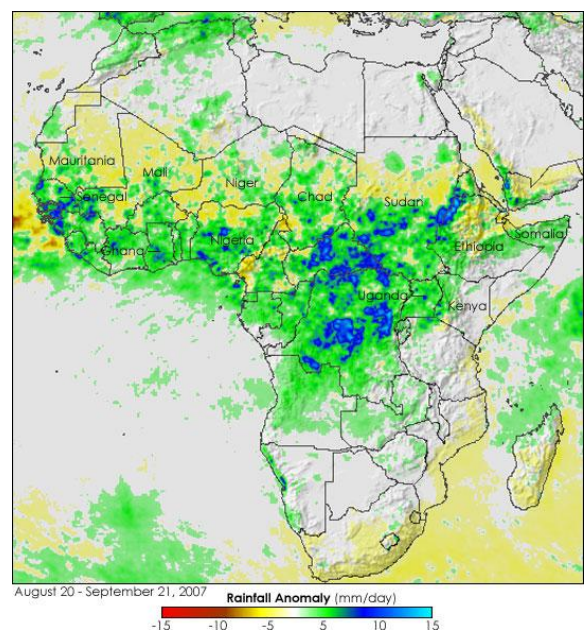


Figure 2: Rainfall anomalies spatially mapped across the Sahel  
Source: NASA Earth Observatory2007

of Sub-Saharan Africa. Greater remittance payments made to rural communities allows fertilizers and other agricultural inputs to be used on the farm. This increases farm yields and decreases the amount of land under production.

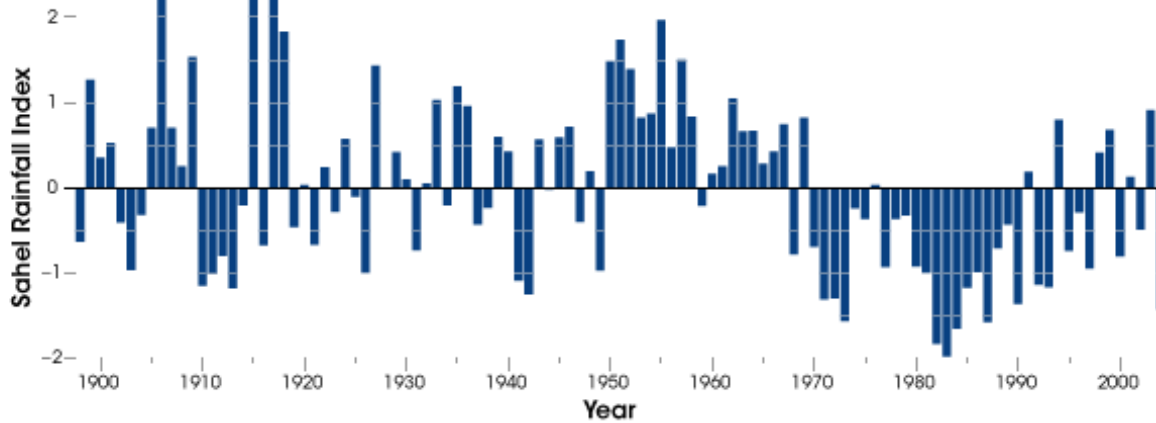
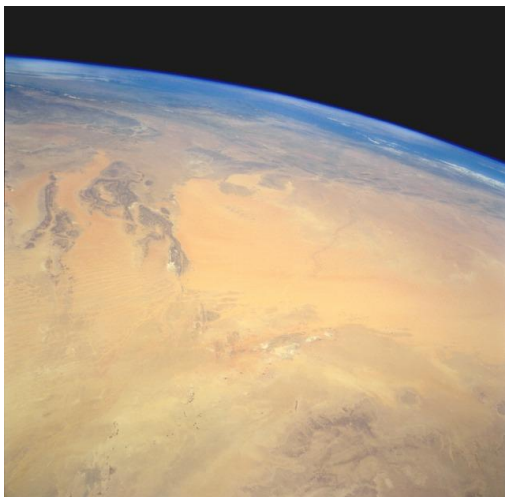


Figure 3: The Sahel Rainfall Index reflects an average rainfall figure against which annual variability can be observed. Source NASA Earth Observatory 2006

**A green future?**

By 2020 the IPCC have predicted that annual temperature increases will be 1°C greater than pre-industrial levels. The greatest temperature increases will be found at high northern latitudes, with 2°C predicted over land masses. Global mean sea-level could reach 44 cm within this century. Precipitation will increase at high latitudes and in the tropics, whilst a decrease in precipitation is expected in the sub-tropics.

What can we learn from Yemen? Population pressure and the resource demands of humans have never been so high. Human activity has taken over and disrupted the planet’s natural systems to such an extent that humans are threatening their own existence. The situation in Yemen is a warning for the future of our planet. What we do know is that action needs to be taken. Top-down policies such as the ‘Helsinki Rules’ expect water to be shared fairly between countries within a drainage basin. However the country with the greatest political might often gets the greatest share. Bottom-up initiatives are a better model as people can take control of their own water security. One initiative is the ‘One Planet Living’ ideal promoted by the global conservation programme, WWF.



The idea behind this principle is not to use natural resources faster than they can be replenished. The use of appropriate technology in order to harvest rainwater is one such strategy. Techniques including sand dams and contour bunding can increase groundwater volumes. Intercropping and shelterbelts can be used to maintain vegetation cover and consequently soil and groundwater supplies.

So in conclusion: the challenge for the global community is not to question the idea of climate change, but to question how we can adapt our behaviour and resource consumption in order to live sustainably on planet Earth.

Figure 4: The Sahara desert today. What will the big picture look like in the future? Source: NASA

Images:

Temperature graph <http://commons.wikimedia.org/wiki/File:Temperature1900-2004.jpg>

Sahel Rainfall [http://upload.wikimedia.org/wikipedia/commons/c/ca/Sahel\\_rainfall\\_timeseries.gif](http://upload.wikimedia.org/wikipedia/commons/c/ca/Sahel_rainfall_timeseries.gif) (Author NASA Earth Observatory 2006)

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GrandErg: [http://commons.wikimedia.org/wiki/File:GrandErgOccidental\\_STS059-238-88.jpg](http://commons.wikimedia.org/wiki/File:GrandErgOccidental_STS059-238-88.jpg) NASA.

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## Opportunities for Geography in the 14–19 Humanities and Social Sciences Diploma

**Alan Marvell**

Vice-Chair of the GA Post-16 and HE Phase Committee  
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As Westaway (2009: 9) comments, "Subjects will have to earn their place in the curriculum by showing how they contribute to the wider curriculum goals for schools set out by the Government".

The new 14-19 Diplomas, covering Levels 1-3, GCSE to A-Level are a major innovation. The new Diplomas are designed to provide a combination of knowledge and skills required by employers and universities. Students will be able to experience a wider range of learning styles from school, college and the workplace with an emphasis on practical investigative activities. The workplace provides a cornerstone in the student experience with each Diploma based around employer engagement.

The Environmental and Land-based Studies Diploma was made available nationally from 2009, it currently has 53 partnerships of schools, colleges and employers with a further 67 approved to start in 2010. The Travel and Tourism Diploma will be made available nationally from September 2010 and the Humanities and Social Sciences Diploma will be available from September 2011.

Although there is not a 'Geography' Diploma there are many geographical themes present within the Humanities and Social Sciences Diploma. This qualification will be of interest to school and college Geography Departments who deliver a Humanities-based curriculum.

It is anticipated that the main examination boards will be offering the Humanities and Social Sciences Diploma at a variety of levels. However, not all examination boards may choose to offer the full range of Diploma titles or levels. The Foundation Diploma (Level 1) is equivalent to 5 GCSE grades D-G, the Higher Diploma (Level 2) is equivalent to 7 GCSE grades A\*-C, the Advanced Diploma (Level 3) is equivalent to 2.5 A-levels (Progression Diploma) or 3.5 A-Levels (Full Advanced Diploma).

As well as subject-based and contextualised learning opportunities, the Diploma will also provide learners will an opportunity to develop personal, learning and thinking skills (PLTS). These skills are further articulated as developing: creative thinkers, reflective learners, effective participators,

team workers, self managers and independent enquirers. These skills are by their very nature akin to a skills-based geography curriculum.

The geographical content of the Humanities and Social Sciences Diploma can be found within the Ofqual *Criteria* (2009). The key overarching themes that underpin the principal learning objectives within the qualification are: The individual in society, people and change, people, land and environment, people and power.

Within each level of Diploma reference is made to specific geographical skills and content. In the Foundation Diploma students are introduced to the ideas of culture and identity. Students are asked to identify the factors that make up the identity of an individual; some of these factors can be expressed geographically. Students are also asked to identify the nature of communities and how they change over time. Specifically, students are asked to “find out how places are defined by their location, natural and human characteristics, how they have developed over time and the ways in which they continue to change today” (Ofqual 2009: 16). In addition students must know and understand a range of social, economic and environmental issues. Students are also exposed to the impact of policy and decision making, including the impacts of policy decisions at a variety of spatial scales.

Within the Higher Diploma students are required to plan effective research which is essentially a fieldwork component. Another requirement is to investigate people and their environment, focusing on the perception of the environment of which fieldwork investigations are explicitly mentioned (Ofqual 2009: 30). The relationship between poverty and wealth is also covered by an investigation onto local, national and global economies as well as the effects of policy making at a variety of spatial scales.

At the Advanced Level students are encouraged to be more critical and analytical. Through challenging knowledge, argument and evidence, students critically engage with research evidence. The importance of place is emphasised within an understanding of beliefs, values and behaviours and also through diversity.

One of the key geographical requirements at Advanced Level is an understanding of sustainable environments in relation to people, place and economic development. There is also a requirement to engage with Geographical Information Systems (GIS) although it is acknowledged that the level of participation may vary between consortia. The importance of place is also reinforced through a study of cultural expression and through a study of local and global economies.

Within the Humanities and Social Sciences Diploma geographical skills are naturally embedded throughout. This creates an exciting opportunity for geographers to be involved in the development and delivery of this new qualification. The extent to which awarding bodies emphasise the geographical nature of the qualification remains to be seen but the initial publications look promising in further establishing geography as part of the wider curriculum.

For further information visit <http://www.humanitiesdiploma.co.uk>

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## June at Chichester College

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The examinations are finished for the AS group but it is only the beginning of June and college says that the students will be expected to attend and so you will need to design a programme of work for them!

A scenario that is probably not unfamiliar to most teachers at the end of the first year.

The problem is what to do! Some of the students are not going to take your subject next year and are only there for the EMA money, some are away taking advantage of cheaper holiday deals in June and there will be some you do not even know about yet, who will join you in September.

Faced with this prospect I attempted this year to do several things during this invaluable month, because you cannot just waste the time. My AS to A2 group numbered 15, a minibus load, so something fieldwork-orientated seemed like a good idea. It might even persuade some of the falterers to sign up. But eight half days of field work seemed to be too much like overkill so I decided to mix in some academic work linked to the visits.

The visits were able to be arranged locally and needed to link to the Year Two work in order to give it some worth. So where to go? The first offer was from a power station on Southampton Water which would link neatly to issues of energy security. This was followed by a guided visit to Chichester Harbour with the Conservation Officer to link to biodiversity under threat.



This is the only part of the group that wasn't camera-shy!!

The third visit was to *Nature's Way*<sup>TM</sup> who pack salad crops for all the big supermarkets. Although they have farms in France and Spain their main plant is a huge facility not three miles away which neatly fitted in to topics of food security, but the fourth proposed visit to a waterworks was not possible, for health and safety problems!

The visits were very informative and we were made very welcome everywhere and were able to see things and go to places that the general public would not normally have access to. Even coming away from *Nature's Way*<sup>TM</sup> with bags of lettuce and plugs of field lettuce to enable us to grow our own!

Following the visit the next session was split into three parts. Students arrived with any notes they had made written up, if only as bullet points, to inform an initial discussion. The discussion had three main themes; their thoughts about what they had seen, questions that had arisen as a result of the visit and how they might use the information they had gathered in an examination context.

The second strand was to undertake a webquest linked to the visit but also strongly tied to the requirements of the A2 specification. This was to answer questions posed but also to extend the student's knowledge of the topic. The intention was to expand the basis of the local visit to the national, even international scale, which was possible in the case of the biodiversity theme and that of energy.

The third strand was intended to introduce students to texts and journals that they may not have seen before using *Infotrac*<sup>TM</sup> in the college library and accessing the shelves like never before. For the first time some students discovered that books relating to their course were not all under the "Geography" heading. [So the induction programme last year was clearly a waste of time!!] *It*

*was at this point one of my students told me that he had never read a book from cover to cover, and would I write his UCAS reference please.*

The texts ranged from the *Geographical Review*<sup>TM</sup> to more academic texts taken from reading lists largely supplied by the examination boards. Carefully selected beforehand to tie in with the field visit, students had to prepare a brief resumé of the article, chapter or section of the book with the intention of giving them either a parallel example and/or to widen their understanding of the issue.

The resumé, research material and their field notes were then collected, duplicated and bound during the holidays to provide an initial resource for the students when they returned in September. It also provided a useful “catch-up” for those who missed June for whatever reason.

While this is not fool proof or the only way forward it worked for me and will be refined for this year. If you have got any other ideas I would be pleased to hear from you.

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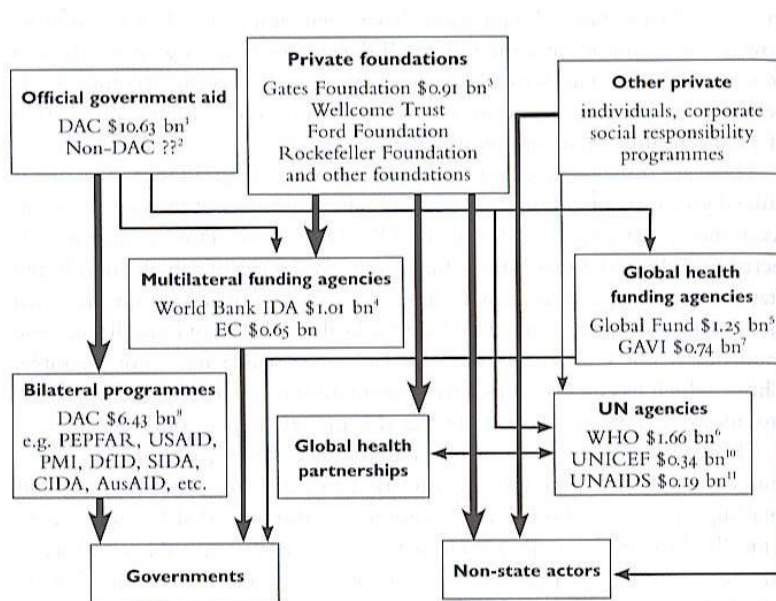
# The Globalisation of Health: funding health in the Developing World

Gill Miller  
University of Chester

For many of us the link between globalisation and health stops at the clinic where we receive our tourist immunisations and malaria tablets. Health, however, is an increasingly global business which includes the spread of disease between countries, migration of trained nurses and doctors, medical tourism, the activities of global pharmaceutical companies and the work of multi-national agencies and NGOs. This latter group of actors have significant influence and responsibility for the direction and delivery of health care in many developing countries. The relationship between national governments and donor health agencies is not negative but may call into question who should be directing the health systems in any one country.

Many countries in the developing world rely on foreign aid for much of their health care, both financially and in expertise. US\$14 billion was given in development assistance for health in 2005 (World Bank 2007). Developed country donors are extremely influential in how that aid is spent, often taking a western, neo-liberal approach to health care spending. Figure 1 shows the complexity of funding through different channels.

Private foundations are increasingly important, giving 25% of all development aid for health.



**Figure 1 Overview of Global Health Funding in 2006**  
Source: Global Health Watch 2 2008 p 212



The World Health Organisation has led the global health community since 1948, acting as the lead agency to coordinate and direct global health initiatives. Its aim is still the same: “the attainment by all peoples of the highest possible level of health, defined as a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity” (WHO 1948).

WHO receives funding from 192 countries, some of whom (such as the US) only contribute a proportion of their committed dues to core activities. Funding has become a major issue in the WHO as the 192 countries do not readily agree on how it should be spent. For instance, there have been criticisms of public-private partnerships and links between WHO and pharmaceutical companies which could compromise the independent position of WHO.

Countries who withhold some of their budgetary contributions use that money for special projects and so have more control over spending. Potentially this enables donor countries to direct spending to areas in which they have special interests. Given the threat of spread of some

infectious diseases around the world such as SARS and Swine Flu, donor countries are particularly interested in supporting health initiatives which will reduce that spread and so keep their own countries secure and safe.

The WHO has developed initiatives such as the '3 by 5' programme in 2000 which aimed to enable 3 million HIV/AIDS patients to have access to drugs by 2005, and the 'Stop TB' campaign, begun in 1998, which aimed to eliminate TB as a public health problem. Both of these initiatives, criticised for not achieving their goals, have experienced funding shortfalls.

The WHO as an organisation has been accused of spreading its limited financial resources too thinly. This has opened up opportunities for other organisations to take a role in funding health initiatives. The World Bank became involved by including policies on health care spending as part of loan conditions to developing countries. A cost effective approach to health provision was required as poor countries sought help with debt relief. In Africa in 2000, twice as much money was spent on debt repayments as on health care (Global Health Watch 2 2008).

Aid agencies such as UNICEF also work with WHO to deliver health programmes. Their work is invaluable in meeting immediate health needs and delivering training within country. However, they too are directed from the 'global north' and have their own aims to address. To what extent do aid agencies deliver the long term structural health support that developing countries want to build? Is the direction and organisation of health care provision driven by the aid agencies or by the decisions of the receiving countries?



Increasingly, other groups are also involved in providing health aid. There are global health financing agencies such as the Global Fund to fight AIDS, TB and Malaria (financed by G8) and GAVI (Global Alliance for Vaccinations and Immunisation). Private funding from philanthropists has also increased very substantially. The Bill and Melinda Gates Foundation and Rockefeller Foundation sponsor major initiatives, most of which focus on single issues such as malaria eradication or child vaccination. In 2008 the Gates Foundation budget was US\$29.8 billion including US\$202m for the Medicines for Malaria Venture, US\$500 for HIV prevention and treatment programmes, and US\$309m for the Global TB Vaccine Foundation ([www.gatesfoundation.org](http://www.gatesfoundation.org).) This compares with only US\$29m at WHO available for control of *all* tropical diseases.

It is of course good news that there are health aid programmes which address very serious needs in the developing world. However it is worth stopping to think about who is 'in control'. The WHO have an 'oversight' role of global health. Foundations sponsor programmes but have no requirement for monitoring or evaluation of their effectiveness. Aid agencies respond to need but their funding is not permanent and is 'programme driven'. Many commentators suggest that there is a very real risk of disjointed provision of health care in poor countries where the health system structure is weak.

'Single issue' aid is popular because it is measurable and generates global support. But does it focus on the root cause of poor health? It is much harder to address the social, economic structures such as lack of clean water, malnutrition and absence of primary health care which lead to child mortality. It is not easy for poor country governments to try to establish their own credibility as a health providers when overseas initiatives deliver much of the health which is needed. Delivering effective health to the poor is always challenging but it may be much more sustainable if developing countries had stronger ownership of their own country programmes.

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# The School Seismology Project

**Helen Hore**

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## What is the Project about?

The School Seismology Project launched by the British Geological Survey has enabled many schools and colleges inside and outside the UK, to set up their own seismic recording station. Linked to a computer, the SEP seismometer and the associated data-logging software, AmaSeis, enables each earthquake trace received, to be analysed and sent to the Project for display on their website. The first training video on the Project website (in resources) gives an idea of the interest that can be generated in a school or college. Workshops are run at a number of universities throughout the country, giving training on how to assemble and set up the seismometer and how to analyse the trace. The day includes very useful demonstrations on ways of teaching earthquake waves and the website itself is a valuable teaching resource.

## How you can use it

Interest can be generated at any level in school and collaboration between Geography and Science departments is likely to be the most successful approach. Students are fascinated to be able to receive real data from an earthquake which they have heard about in the news, minutes after the event. At Central Sussex College (CSCA station), joint work between Physics (OCR Salters), Geology and Geography has benefited the teaching of earthquakes in these subjects and generated much interest.

## Setting up the seismometer

The circular brass weights help to hold the seismometer in place, while the arm is able to swing in response to the earth movement. The movement of the arm in turn is restricted by the damping plate and magnets. The instrument must be located on the ground, ideally on a concrete surface, aligned either north-south or east-west. The workshop includes a practical session on setting up the seismometer and full details are available on the website. Our seismometer sits ignominiously under a large cardboard box but it can be kept in a prominent place in a display cabinet, as long as it is attached to a computer.

Fig.1 Types of earthquake waves and their movement

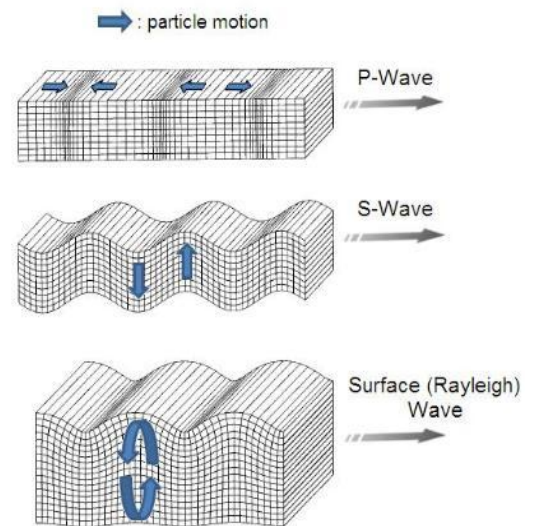


Fig 2. The SEP Seismometer in use in the School Seismology Project



### Receiving and interpreting the trace

A continuous real-time trace is received, showing a sudden increase in wave amplitude when a large earthquake occurs. Sections can be highlighted and enlarged as shown in Fig 3. Arrival times for each set of waves are published on the Project website and can be marked onto the trace (the red vertical lines on Fig 4 ).

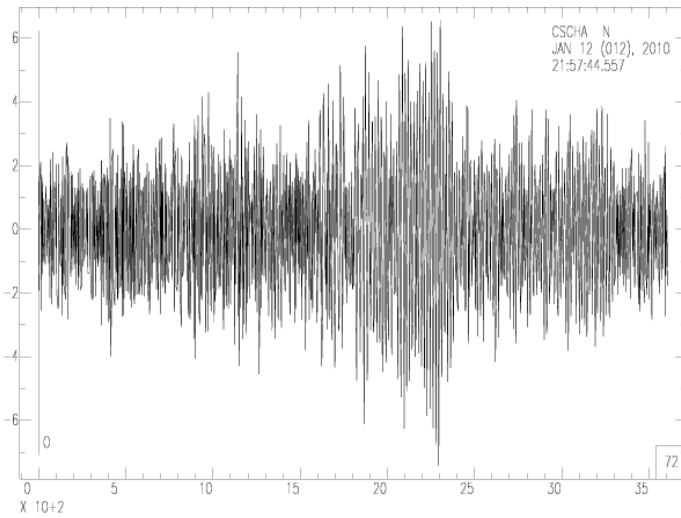


Fig 3. Seismic trace as shown on the Schools Seismology website of the Haiti earthquake, which occurred at 21:53 hours on 12 January 2010.

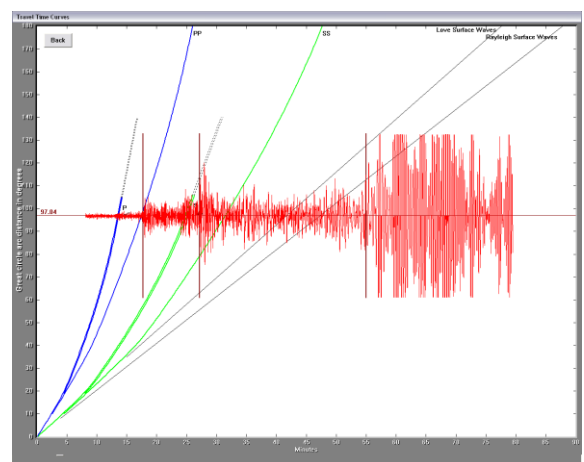
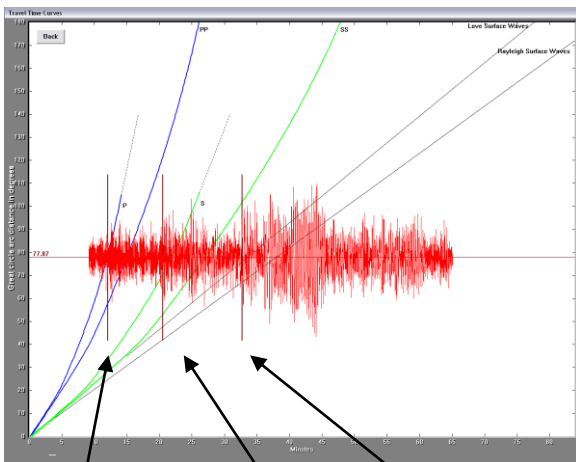
(the red vertical lines on Fig 4 ). With the depth of the earthquake focus known, the seismic trace can be transferred to the travel time graph where it can be moved around the screen until the wave sets are aligned with the appropriate curves (Figs. 4 and 5).

Students are able to apply the technology and use the data in different ways:

- To distinguish between P, S and surface waves from seismic events from around the world (using UTC time). This illustrates that the three main sets of waves have different amplitudes and are received in a sequence. Surface waves have the greatest amplitude and cause the most damage.
- To understand that the time lag between the arrival of each set of waves increase with distance from the epicentre. The arrival times for the seismic waves from the Chilean earthquake, which was 11,897 km away from this seismometer (Fig. 5) are further apart than the arrival times for the Haiti earthquake, which was 7,154 km distant (Fig.4).

Fig 4 Travel time graph for the same earthquake in Haiti. All three sets of waves were received.

Fig.5 Travel time graph for Chile earthquake on 27<sup>th</sup> February. Only reflected P and S waves were received



P wave arrivals      S wave arrivals      Surface wave arrivals

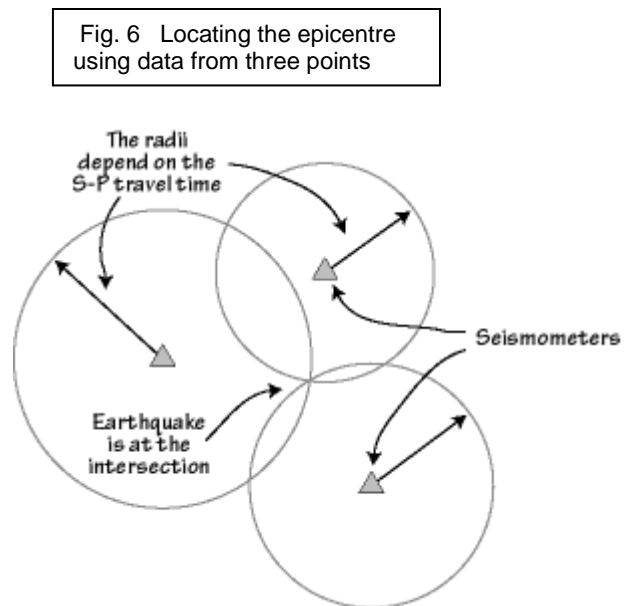
- To understand the concept of the shadow zone (and its measurement, using epicentral angles). This can be shown, by the absence of P and S waves. As the UK is in the shadow zone for P and S waves arriving from the earthquake in Chile on 27<sup>th</sup> February, Fig. 6 shows reflected P and S waves, which have bounced off a major boundary inside the Earth.
- Use of animations on the website can be used to illustrate how waves are reflected and refracted at discontinuities within the earth, to further complicate the graph recorded. PP waves are reflected P waves and SS are reflected S waves (Fig.6)

### Using data to calculate the epicentre location

Data, from three stations which are widely distributed, can be used to locate the epicentre of an earthquake, by plotting their distance from the recording station and drawing three circles which overlap at the epicentre.

### Recent earthquakes

The School Seismology Project website lists and locates earthquakes as the seismic waves are received at Keyworth. An initial, magnitude 7 earthquake occurred on 12<sup>th</sup> January along a transform fault boundary in the Caribbean Plate, with an epicentre very close to Port au Prince. Here in the UK, all three sets of waves were received (Fig. 3.) Much larger surface waves were received from the magnitude 8.8 earthquake near Concepcion in Chile, which occurred on 27<sup>th</sup> February, even though it was much further away (Fig. 5). Only reflected P and S waves were received here. Numerous aftershocks, many with a magnitude of over 6 occurred after both events, which are also clearly distinguishable on our recording.



Earthquakes are often deeply tragic events for the countries in which they occur. Developing student interest enables our society to have an increased understanding of the mechanisms causing earthquakes as well as the need to support those afflicted, and maybe one day in leading to increased protection to those at risk.

### References

The School Seismology Project

<http://www.bgs.ac.uk/schoolSeismology/app/schoolSeismology.cfc?method=viewLatestQuake>

Seismic waves and the slinky - <http://web.ics.purdue.edu/~braile/edumod/slinky/slinky.htm>

SEP seismometer manual on the Project website -

<http://www.mutr.co.uk/images/Seismometer.pdf>

## Another Take on “A Different View” from an (access to) HE perspective.

Richard Kotter  
Northumbria University

“You *really* mean that we should *read* more than *one* textbook, which has *more* than *one* answer in it to *any* question ?!” Teachers and lecturers helping youngsters and mature students to prepare for the transition from secondary to tertiary (HE) geography will be familiar with the look on the faces of some of their pupils.

What we ought to be concentrating on is critical thinking and debate, through the *medium* of geography as a discipline. After all, most of our students will *not* be employed as ‘geographers’ after they graduate, though some will become geography teachers who need a critical edge to be able to teach and influence.

I am proposing to have another look at a “*A Different View*” (ADV), the GA’s new manifesto which I very much like! I’m taking the liberty of taking passages to comment on, and elaborating on them from my perspective.

**ADV: “Geography underpins a lifelong ‘conversation’ about the earth as the home of humankind. ... Geography is not a narrow academic subject for the few. It is fundamental for everyone. “**

So it is: Maps of meaning, mental maps, everyday geographies in terms of routines and footprints and impacts across space are critical in terms of engagement and responsibility, but in the wider public is more driven by environmental subjects other than geography as a discipline. Yes, we have public geographies, including much on TV and in print and certainly on the web also. Much of the time, though, a geographer is called up in a quiz to do the honours on topography ...

**ADV: “Geography fascinates and inspires: the beauty of the earth, the terrible power of earth-shaping forces – these things can take us out of ourselves. Geographical investigation both satisfies and nourishes *curiosity*.”**

Except that curiosity cannot really be satisfied, but keeps on growing, with more questions, though more sophisticated ones, emerging. Exploring in a different sense: to the end of the knowledge, rather than the end of the world.

**ADV: “Geography *deepens understanding*: many contemporary challenges – climate change, food security, energy choices – cannot be understood without a geographical perspective.”**

Yes, but where are the geography teachers / lecturers *consistently* convincing their schools / departments to have themed cross-curricular days, and projects or connections between ‘modules’? And are we really claiming that these challenges can solely be understood, never mind addressed, by geographers? We offer a spatial lens of thinking across time and space; we think relationally, but we do so building on the other physical and social sciences; and we operate within the intellectual and ideological climate of our times. Anthony Giddens, coming from Sociology has been more successful in writing on Geography, as has Paul Krugman from Economics, than have geographers, by and large, in making political scientists and economists think (differently). The challenge applies at all levels, from schools to university departments, local civic society and politics, and at national and international levels. Just claiming that we do ‘the spatial thing’ is not going to cut it, when there are regional scientists, international political advisers and international relations experts trading in (more sophisticated versions of) geographical determinism.

It is encouraging that the RGS has supported and organised a good range of geographically pertinent debates on the 21<sup>st</sup> challenges, including the ‘credit crunch’, (with school resources for teachers in preparation). (<http://www.geographyteachingtoday.org.uk/ks3-resources/online-cpd/>).



To understand this we would need to see the world with different eyes and changed perspectives. Can we develop a 'different view' by looking at times from elsewhere, with another's eyes, to explore connections differently to how they often get portrayed looking from here ?

Take the recent poll in Iceland forced by the President there (as a result of a petition) against the parliament which had already ratified the bill on whether the Icelandic government should repay the UK and the Netherlands. The terms had already been improved upon by the UK government after a realisation that Iceland would need time and flexibility to compensate the UK government for their bail-out of Icesave savers. No mention any longer, in the BBC and newspaper reports, of seemingly incompetent and gambling churches, county councils and local authority officials banking on making huge return and building budgets on Icelandic investments. Icelanders clearly had a distinctly 'different view' of the financial crisis than the British.

### **Not quite the City of London !**

[http://www.thisismoney.co.uk/savings-and-banking/article.html?in\\_article\\_id=496805&in\\_page\\_id=7&expand=true](http://www.thisismoney.co.uk/savings-and-banking/article.html?in_article_id=496805&in_page_id=7&expand=true)

Image removed for copyright

**DV: “Geography serves vital educational goals: thinking and decision making with geography helps us to live our lives as knowledgeable *citizens*, aware of our own local communities in a global setting.”**

Is that enough ? Shouldn't we (lecturers / teachers, schools in the community, pupils, students and graduates) be *active* rather than just informed citizens? Perhaps we are still being told that there are “*controversial subjects*” which need extra careful handling in teaching, such as: human rights and citizenship. Which subjects are *not* controversial?! Football or Formula 1, political party sponsorship (from 'non-doms'), the 2010 Olympic Games and its benefits or otherwise for the UK, bankers' bonuses or the issues about climate change?

Perhaps the real test of a well informed and communicative geographer lies in the informed intellectual contribution in the pub (my favourite test for recent graduates to get them thinking convincingly on their feet), in the local amenity group, the book club or a neighbourhood ward meeting with local councillors and so on.

**ADV: “Geographers are skilful: using maps and mediated images of people and place, numerical data and graphical modes of communication and getting to grips with the geographic information systems that underpin our lives, make geographers *skilful and employable*.”**

Yes, but perhaps we should not just be utility but of critical use – not just applied and creative at it, but also professionally ethically circumspect. Even most chemical and other such professional societies have developed an ethical code / ethos for their profession.

According to the RGS website, “Chartered Geographer (CGeog) is the only internationally recognised professional accreditation for those with competence, experience and professionalism in the use of geographical knowledge, understanding and skills in the workplace. ... It is relevant whether you work in academia, a private-sector consultancy, a public sector agency or a business.

It is the same in concept and scope to chartered accreditation in other professions such as Chartered Surveyor, Chartered Engineer, Chartered Environmentalist, Chartered Meteorologists etc.” “Chartered Geographer (Teacher) [status] is available to teachers who can demonstrate competence, experience and professionalism in the use of geographical knowledge or skills in and out of the classroom, and who are committed to maintaining their professional standards through ongoing continuing professional development (CPD).”

The search term ‘ethics’ on the RGS website yields a “No results for your query in our programs” response ... True, we have had and still have an ongoing debate in the GA’s *Geography* and *Teaching Geography* journals on value (ethics, moral issues) in geography, with a robust debate at the last Annual Conference in Manchester. Most of us are defending the subject and the way it has been made critical and relevant from the charge of ‘politicising’ or ‘drowning in values’ (and hence distorted from the topographical and descriptive emphasis, rather than the enquiring – and not *just* to ‘solve problems’).

But there still seems to be a hesitation with the so-called “controversial subjects” at the secondary / FE / HE interface. There is evidence of struggling with wider understandings of colonialism, slavery, human rights, and racism through to the 3<sup>rd</sup> year of undergraduate study. These are all issues of geography’s difficult heritage institutionally and intellectually which is acknowledged in ADV but which is very much of *here and now* – think of the last European Parliamentary elections (with the BNP winning MEPs), concerns over the upcoming General Election as well as at local level. In addition, hate crime, anti-semitism, islamophobia and xenophobia can make a contested and passionate debate more difficult than it might otherwise have been. A case in point is the ‘foreign’ / EU (Italian and Portuguese) workers at a power station in Lincolnshire in early 2009, or generally the unwise and unfortunate electoral phrases “British jobs for British workers” as applied within the EU context without any relevance to Romania and Bulgaria where it would have made some (transitory) sense.

**ADV: “An essential educational outcome of learning geography is to be able to apply knowledge and conceptual understanding to new settings: that is, to ‘think geographically’ about the changing world”**

One way of understanding geography is as a *language* that provides a way of thinking about the world by observing it, investigating it, perhaps even understanding it in new ways. Languages have *vocabulary*. You need vocabulary to speak the language, but it is not enough. Languages also have *grammar*: rules, concepts and procedures which allow you to construct meanings.”

So calling something “controversial” then implies some warning and danger sign, even if it is meant to flag up an issue in a supportive way with additional well-developed resources. Could this be a prompt for many schools / teachers / lecturers to stay clear of it?

**ADV: “The *grammar* of geography is its ‘big ideas’, which help us organise and attach significance to the *vocabulary* (geographical information). These big ideas have been expressed in various ways, from Early Years to Post-16.”**

For example, at the GA’s 2006 Annual Conference, Professor Peter Jackson suggested the following framework:

- space and place (e.g. the ways space is used and humanised to create meaningful places)
- scale and connection (e.g. the ways in which people and places are connected, from the local to the global)
- **proximity and distance (e.g. how technology has in some ways eroded the friction of distance – literally, shrinking distances)** (my emphasis)
- relational thinking (e.g. how we see the world depends on our perspective).”

But much of the research and writing of academic geographers, and the empirical research on which it is based, shows that the world is not just shrinking in space and time, but also in parts “extending” in terms of relative distance as in **accessibility** in terms of time, efforts and costs.

Some places and people are becoming **dis-connected but still affected** due to a lack or withdrawal or increased cost from access to infrastructure, resources, and influence but where other influences *beyond* their control travel (majority languages, commodities, currencies, waste, pollution etc.).

So I agree that we ought to be “thinking geographically”. We need to be using the big ideas to organise the information which enables children and young people to develop an understanding of the physical works, human environments, interdependence, place and space [*and time - for otherwise you can't make sense of change*], scale, as well as young people's / students' lives – as in “Living Geographies”, “Everyday Geographies”, “Material Geographies” , “Engaged Geographies”, “Public Geographies”, “Participative Geographies” and so on.

So I think the case has been made for “Living Geography” which:

- is directly relevant to people's lives and the world of work
- is about change – recognises that the past helps explain the present, but is also current and futures oriented
- has a scale ‘zoom lens’, so that the local is always set in a global context
- is ‘deeply observant’ – it looks beneath the surface to identify the mechanisms that change environments and societies
- encourages a critical understanding of big ideas like ‘sustainable development’, ‘interdependence’ and ‘globalisation’.

Lets teach *and* live it – at *all* levels !

Just a Few References:

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<http://www.procon.org/sourcefiles/TeachingControversialSubjects.pdf>

<http://serc.carleton.edu/NAGTWorkshops/affective/controversial.html>

<http://www.globaldimension.org.uk/resourcesearch/results.aspx?selSubject=36&rs=cs>

<http://www.throughthereyes.org.uk/>

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## **A level Geography Conference for students**

**Tuesday 22 June 2010**

**Key themes: Urban areas and River management**

London venue

**Keynote Speaker: Rita Gardner, RGS/IBG**

Further details: contact Viv Pointon [vivpointon@hotmail.com](mailto:vivpointon@hotmail.com)

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Post-16 and Higher Education Phase Committee  
& UCU Geography Section**

**Annual General Meeting at Conference 2010**

**15.15 – 15.45**

Why not join us at the Post 16 / HE conference stand and share a glass of wine!

15.45- 16.15, Friday 9<sup>th</sup> April

The Post-16 and Higher Education Phase Committee promotes and safeguards the study and teaching of post-compulsory sector Geography. If you work in a school sixth-form, college or university and would like to join the Committee, please contact us. NQTs and student teachers are especially welcome. To find out more about the work and activities of the Committee, see the Post-16 and HE area of the GA's website, [www.geography.org.uk](http://www.geography.org.uk).

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The Post-16 and Higher Education Phase Committee sponsors

**Living in Arid Environments 1 and 2**

Friday 9 April Workshop 13, 09.00 – 09.50 and 11.30 – 12.30

**Plus: Teaching about arid environments, water and food supply**

Friday 9 April 13.50 – 14.20

Sessions convened by Viv Pointon, Freelance Geographer

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**Introducing Top Spec Geography**

**Friday 9 April 11.30 – 12.20**

**Editor, Bob Digby,**

**Emerging Superpowers:** Gill Miller, University of Chester

**Health Issues:** Dan Cowling, Charters School

**Flooding:** Dave Holmes, Freelance Geographer and David Croote, University of Plymouth

**Climate Change:** Professor Terry Callaghan, University of Sheffield