# Gresham College Main logo

15 January 2015

**Educationally ‘Green’:**

**University Research, Teaching and Campus Greening**

Professor Carolyn Roberts

Good evening, ladies and gentlemen, and thank you for turning out on a cold evening.

I want to start off by taking us to another time and another place. Would anybody like to just comment where this is? Do you know where this is? Well, this is Bangladesh. You can see there the huge delta into the Indian Ocean. It is a striking image, and I want to spend just two or three minutes reflecting on Bangladesh. I am talking tonight about universities, and I want to just take us to a university in Dhaka for a few minutes.

Bangladesh, as I am sure many of you will know, is one of the poorest countries in the world. It has a university system, in part, established under British colonial rule, but latterly has new players emerging, new private universities. Now, they are very variable in quality, but I would like to play you an extract of a YouTube video about a particular university and let you make your own judgement.

[Extract plays – multiple speakers]

*“We are trying to offer an education which will give our students the highest level of professional or technical skills but also give them a serious foundation in basic knowledge and a lifelong curiosity to learn. Ultimately, to be a nation, you also need your poets, your philosophers, your scientists.”*

*“I am the Vice-Chancellor at the University of Liberal Arts, Bangladesh.”*

*“We want to train up our boys and girls both as a citizen of Bangladesh and also a citizen of the world.”*

*“Where we are right now is part of the course. The course is called Sustainable Development, so we are all here doing research and reports for it. When we came here, we did not realise that we would be doing this kind of work, but it has been very interesting. We had no idea that, just for one grain, a food, people work so hard.”*

*“ULAB has taken this to be a core value of the University study, that every student should have come in contact with this word, “sustainable”, what actually it is, what does it mean…”*

*“We can learn things from the courses. Those are really good.”*

*“Too often, learning institutions in the third world become a mailbox. Learning is developed somewhere else and you are just passing it on. ULAB is intent on developing knowledge that is created here and that can be shared by people the world around.”*

Now, I do not know what you think of that, but let us just hear one of the staff there describe the purpose of a university as he sees it.

**Dr Jahir Haque, Deputy Vice Chancellor at ULAB**

*“Universities must offer a unique platform for policymakers, economic leaders, researchers, students and corporate partners to work together to explore innovative solutions”.*

Now, Dr Jahir is not very clear in English – he is working in about his fourth or fifth language actually – but he is talking about the importance of universities offering a platform for debate and for preparing students, universities and staff to have that debate. Now, in a country that is grappling daily with serious environmental problems – flooding, drinking water contamination, sea level rise – superimposed onto extreme poverty, the like of which we rarely see in the UK, I think this is a seedling green story about education for sustainable development.

Now, I want to switch over now, contrast that, if you like, to what might go on in a UK university. How does it work in a UK university? Now, the UK leads the world in much of its Earth and Environmental Science research and in the overlapping disciplines of Applied Geography and Built Environment, but when it comes to what we might call greening and green initiatives, the situation is not universally rosy. Some green initiatives, despite the strength in the disciplinary areas, have not succeeded in the UK. The one I would cite would be something called Regional Centres of Expertise in Education for Sustainable Development, and I doubt there is anybody here, or indeed listening on the web, who has ever heard of them, and I have to say, I wrote an application for the UK to have one of these things, which succeeded, and the whole initiative has not gained much recognition in the UK.

What I want to do tonight is just to explore how UK universities have approached environmental challenges in their teaching, their research, and what I would describe, in a way that is not intended to be pejorative, their housekeeping practices, and I want to start really by seeing what we can learn from the story of one such institution. I am going to call it the University of Borsetshire, and for those of you who, like me, are Archers’ fans, you will position that immediately. This is an English university. It has offered higher education courses since the nineteenth century, but it only achieved a university title sometime after 1992, and like many universities today, it would call itself I suppose a teaching-led, research-informed university, essentially a liberal arts college, like the university in Bangladesh there, but a liberal arts college plus. This particular university did have a track record of teaching in environmental disciplines and had a small research unit, broadly in the same area as well, and in terms of its position in relation to its housekeeping, it has operated in historic and modern buildings, some of which, at least 25 years ago, when I am going to start my story, were in a rather poor state.

Now, from the early-1990s onwards, the staff in this particular university – and this is not untypical of many other institutions in the UK – some of both the academic and the support staff became interested in addressing emerging, rather abstract environmental themes through some kind of action. The early activity is very poorly documented and of course we know that history is often veiled, if not overwritten, but by 1991, the institution had established an Environmental Management Committee, drawn up a set of policies and strategies that had been approved by the leader of the college, and started a number of initiatives. You can probably imagine the sort of things that were going on in the 1990s. There were pushes on recycling, there was a cycling week, there were energy audits, and there was some investment in the building stock to render them more efficient, and there were investigations as well, some of which were undertaken by students, with staff supervision, sometimes as part of their courses, and the university itself had a shot at delivering some elements of education for sustainable development training to academic staff, so that they could incorporate it into their teaching. It also audited its activity. It audited its energy consumption, its water consumption, and so on, drawing on students to help, and using a model developed by one of the leading local authorities in this area, Kirklees Borough Council.

Alongside that, it released media messages of course. It was trying to position itself at the cutting edge of activity. Despite the elements of hype, and I think there was a certain amount of hype in what was going on, and what looks today to be things which are curiously amateur – I do not think we would probably expect a university today to be running cycling week, with senior members of the university seen tottering along tracks within the campus when, patently, they had not ridden a bicycle for years, but that was what was going on. Despite all that, there was I think an emerging environmental and sustainability commitment, and it was expressed in the university vision and backed by the Vice-Chancellor, and by the end of that decade, by the end of the 1990s, Borsetshire had started to receive awards for its work. So, in 1997, it was recognised as a trailblazer and then other awards followed as well – these are a decade later. It got a series of awards, and I will touch on one or two of those in a minute.

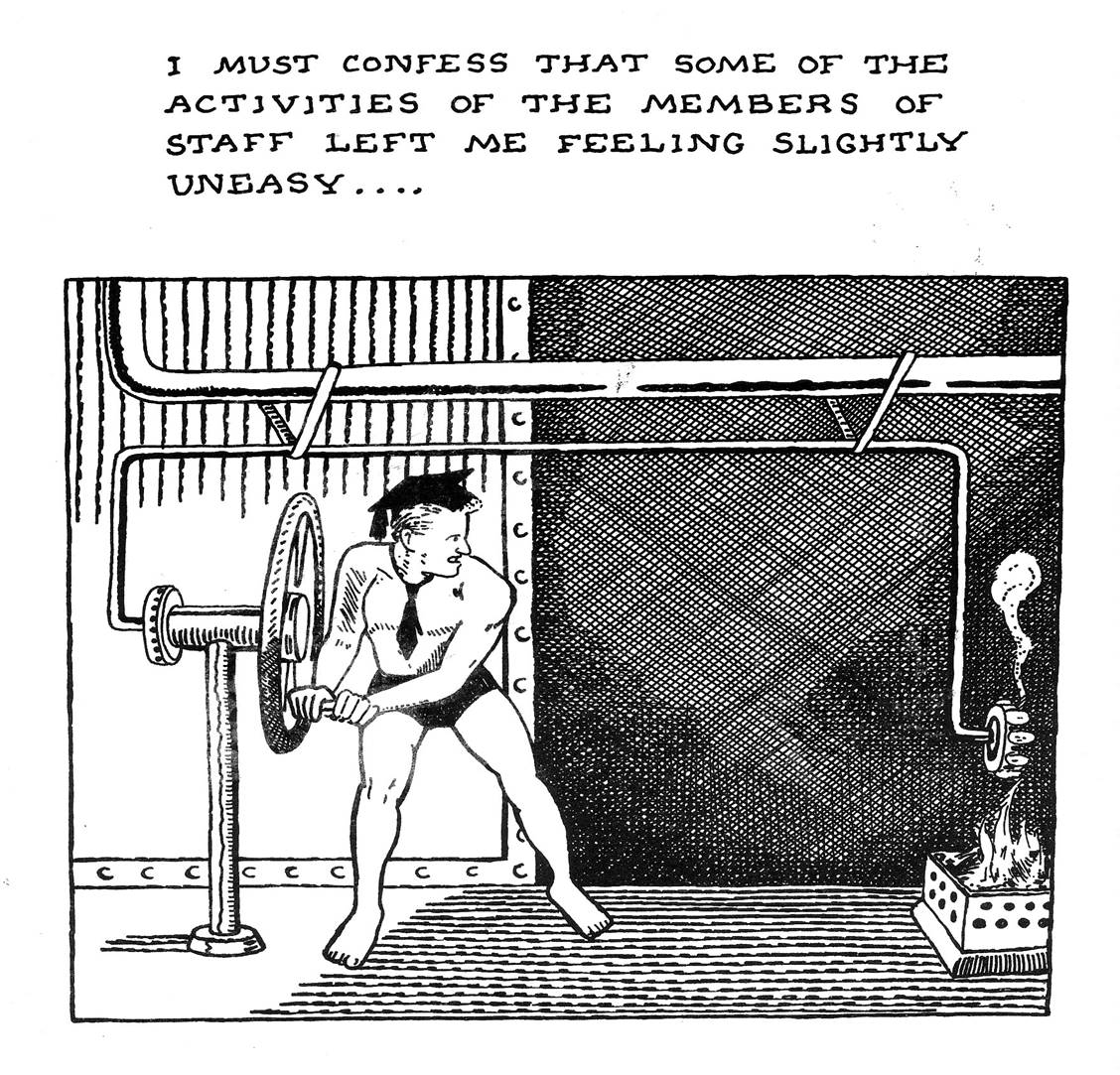
I have to say though that a Dean, at the time, one of the Deans at the time, remarked, in print actually, that it did not seem that they were a trailblazer to him, more as if the university was groping its way forwards and sometimes falling back, and mainly really learning from the mistakes it had made. The journey, in his view, was the thing, rather than the endpoint – greenness, as we might say.

Now, in this particular instance – and, again, this is not atypical of other institutions – the activity overlapped with the push for what was a very elusive university title. Many of you, if you are at all familiar with universities, will recall that back in the early-1990s, many of our current universities were operating as polytechnics or colleges of higher education. That influenced things in a number of ways.

Sorry, I was just going to illustrate the mission statement there or the vision in 2006. You can see there, by 2006, it had a statement about diversity, sustainability, and social justice appearing in the overall strategy for the institution, and again that was the vision statement. This is the mission statement, “an approach to social responsibility”, again reflecting its commitment to sustainability. Okay.

So, what did it do? Well, I mentioned some of these things already… What I did not say during the push for a university title was that there was a lot of anxiety.

Cartoons are very dangerous things these days, as we know. I do like this one though because I think it sums up very nicely the attitudes of many senior managers in universities towards the academic staff: “Some of the activities of the members of staff left me feeling slightly uneasy.”



The problem with many universities, as they approached the move to becoming a university, they were being audited by external agencies, in particular the UK Quality Assurance Agency. Universities were being asked to set down in their policies exactly what they were doing and then to audit it, and they became very concerned that, if specific requirements, for example, to have education for sustainable development available to every student, that when they were audited, something would be found to be lacking. A member of staff perhaps might not do it. They might, even if there were constant reminders to staff to do X and Y, they might not do it, and this might compromise the aspirations of the university to be rewarded by achieving this elusive university title. And I have to say, in my experience, when you have regulations that say things about the curriculum, academic social scientists in particular are much more inclined to question the basis of the instruction rather than to obey it – that is what university staff do, they say “Why?” rather than “Yes”.

So, in this particular university in Borsetshire, the early commitment to what was starting to be called education for sustainable development disappeared for several years during this move to becoming a university, and then it re-surfaced in the mid-2000s. At that time, another opportunity arose, a risk and an opportunity, and this is characteristic I think of some of the serendipitous things which happen in any story of institutional change. The university decided to take the risk, to put its head above a metaphorical parapet, by applying for certification through ISO14001. Now, this is the Environmental Management System. At the time, no university in the UK had ever achieved ISO14001, so this was quite a big deal. Many universities are of course risk-averse and certainly were then, but there seemed to be an opportunity for Borsetshire to carve out a little bit of territory here, with a distinctive mission that just might attract students.

Now, for those of you who, like me, are not very mentally attuned to the detail required in auditing of any sort, I can tell you that this sort of task is very challenging, but Borsetshire was successful. Despite the ructions that were created in the Estates Department, who were not at all keen on this, the ISO14001 framework was then in place after the success, and that was the mechanism for ensuring regular progress checks, rather than these unstructured initiatives that had taken place in earlier years – the cycling week, the environmental art exhibition and so on. So, the university now, effectively, had required itself regularly to monitor and improve its environmental performance, and by and large, it did.

Taking risks and dealing with the unexpected. I could not resist putting this in, because, as some of you know, I have an interest in rivers. There was a risk, a big risk, but, in this particular instance, it came off. So, by 2006, the momentum was strong. The institution was beginning to be noted externally for its work and such that a new Vice-Chancellor who arrived talked about sustainability now being embedded in the DNA and permeating all aspects of the business. So, this new green species, with greenness in its DNA, had seemingly evolved.

It is possible to think about change in any organisation as a process that can be brought about using one of a number of strategies, and I would like to invite you to reflect on this from your own experience as a member of a group in, say, a business or a voluntary body or a professional body. How do you get change in an institution?

I offer you a number of models for this, and these are drawn from all sorts of areas. I could have actually drawn on hundreds – there are hundreds of models of institutional change – but here is one of them. This is based on some work by Hopkins in 2002, and he talks about what you need to do is initiation, implementation, and institutionalisation – that is the model of change. So, you initiate, you implement, you institutionalise, and there is a few sub-headings there suggesting broadly what you might want to do within those things, and if you do that, you will get change, apparently.

Here is another one, and you will note that alliteration is a common feature of these models… This one has got, I think six or seven Ss: staff, style, systems, strategy, structure, skills, and super-ordinate goals. These are not in any particular order, but in this case, they are things you need to address, things you need to think about to get change.

Here is a graphical one. I am sure many of you have seen something like this before, a model of change where you get some kind of perturbation, some collapse of the system, there is resistance, there is chaos, and then hopefully some transforming idea that integrates things, pulls it back, evolves it to a new state which is somehow better, a new status quo. I hope you are keeping in mind here your own organisations. I reflect on my own experience with the local PTA actually in this context – it was a remarkably long time in chaos, I have to say.

Finally, some of us who are perhaps more psychologically inclined or sociologically inclined might be familiar with models of institutional change that are based around the idea of appreciative enquiry. So, it says we appreciate what we have, we envision, we dialogue it – it is an American thing, we dialogue, we talk – and we innovate to something new in order to achieve the required change. It all sounds so simple.

And indeed, Trowler and colleagues have grouped change models into a number of different sets. What we have been talking about is some of these. The technical/rational approach, it is all very logical, very straightforward, very structured. There is ones to do with resource allocation: if you invest in some parts of your organisation and dis-invest in others, the change will emerge. There is one that talks about diffusion: you plant an idea and it diffuses somehow to others. And so on, and then, at the end, he talks about models using complexity.

Any of these models might be used retrospectively to describe change in an organisation, whether it is yours, your PTA, your professional body, or whatever, after the event, and I suspect that in fact most of these models are used after the event to try and describe what might have happened, rather than what one might do, and that is what I am going to just do myself now.

I am going to actually draw on a very simple model, something called Kotter’s Eight Stages of Change. If any of you are familiar with this, there is a rather nice book about penguins associated with this one. It is available for about 48p on the web, as I discovered, because there are so many books on institutional change, the value has reduced.

Here we see Kotter’s Eight Stages of Change… Now, this is a bit more structured in terms of what you do, but it is still a simple model. It describes a set of stages that you might go through.

Now, I want to just express it in a different way. I really like this one, this way of expressing it. This is a metaphor. This is St John Climacus’ Ladder of Divine Ascent – it is the journey to heaven, in this case, greenness perhaps, and there are many challenging steps, and what you can see on the screen here is the monks on the ladder and the demons trying to pull them on, and the mouth of Hades, at the bottom there, swallowing up the ones who have fallen off, who have fallen by the wayside, and there is some people down there on Earth praying for those on the ladder. Right at the top, we have Christ waiting for the successful ones to enter the Holy Kingdom, to reach this new state. So that is the journey that change agents face in this particular model.

Now, some of Kotter’s descriptors of the steps of change can be identified in Borsetshire’s story. I am not going to go through all of them. There were all sorts of things that one might recognise after the event, talking about, for example, here is one of them, “empowering broad-based action” - how do you go about doing that, and how do you embed change into the institution, how do you follow it up afterwards, how do you consolidate and produce more change, and so on. So, this is a simple model of change.

Staff…there were some things which were important and others not. Many institutions, in fact, many UK universities, have gone through the same process. Let me give you an example: Cardiff University, for example, in 2002, they were talking about local transport providers. They talked with the local transport provider, had an initiative on transport, and then they embedded it in their systems by requiring staff to use bus services and walk and so on, and it succeeded, apparently.

There is a later one… I have put it as a “reluctant” participant, Loughborough University, who responded, principally, very late on, to a student-led campaign, and started moving through their process, the metaphorical ascent to heaven…

Now, there is lots of examples of this reported in the literature, both as stories of success and, in some cases, with highly complex analyses of the key drivers behind the changes, and what I would say to you really is that Borsetshire perhaps had moved just a little earlier than most of the other institutions.

Now, there were some things which predisposed it as a rather unlikely winner, if you like, in the race for greenness: there was a strong guiding coalition; there was a sense of urgency; there was vision and strategy development; there was some opportunity to experiment across the different campuses in sort of social laboratories. Conversely, other things proved very unimportant actually in Borsetshire: very little money was invested – there was not the money to do it, and that was, again, a situation common in many universities at the time. There was very little technology deployed – there were not technological solutions. There was only a part-time appointment to manage the thing, and it was run alongside, and part of, Health & Safety, which raised some fears in some people probably, and nobody was offered financial inducements for compliance, nor promotions, and so those things were not important. And, equally, other things came and went - voluntary student groups, for example. There were particular enthusiasms in particular years, and students did something and staff did something, but interest waxed and waned. And the quality assurance systems of the institution, as I suggested earlier, varied as well, from being very strongly prescriptive, “You have to do this,” through to, “No, you can do it if you want to.” So, lots of examples there of things that both supported change and really had very little influence or, in some cases, negative influence.

Now, change of course is not linear, as Kotter implies. It is very complex. It is circular. It really cannot, in fact, in my opinion, be steered to any significant degree. Some changes occur very, very rapidly. The early stages at Borsetshire happened within a few months, actually – things started to happen. Other things took very much longer, and there was not that gradual ascent to heaven, as many of the models suggest. Equally, serendipity played an important role: some things just happened to be available, and novel opportunities and risks came. Equally, new goals were set, even though the initial goals that had been described had not been achieved, so the pathway was much more meandering and up and down than is illustrated on here.

We could say that those are all typical of “wicked” problems, which I talked about in previous lectures and will refer to again, urgent problems, with lots of different stakeholders, with multiple languages, ideas and goals, and complementary and competing aspirations, where what you do in one place, at one time, affects something somewhere else. For those of you who are unfamiliar with this concept, I would refer you to Rittel and Webber’s work in the 1970s.

So, we have institutions changing, we have models of how that might happen, what we might do to support it… What I want to turn my attention to now is: does it actually matter? Does it make any difference?

Well, if nothing else, three million people work and study in UK universities. UK universities occupy 9% of all the office space in the UK, and they are very key parts of the economy, certainly in relation to their overseas student recruitment. Beyond that, the organisations that fund universities, the Higher Education Funding Council for England, in England, says that it matters, tells institutions now that they need to be doing this, and in the past, it has rewarded or penalised financially those who did not comply. And crucially, I think, students think it matters.

Now, the National Union of Students’ study has confirmed this for several years running. I want to just play…

[Extract plays – multiple speakers]

**Jamie Agombar, Head of Sustainability at the National Union of Students**

*“The role of universities is incredibly important in sustainable development and sustainability. There is a UNESCO statistic that less than 3% of the world’s population have gone to university, but 80% of the world’s leaders have been to university, so a great way of changing things in society is to embed it into tertiary education. At the moment, so many students come out with what is technically a degree that will get them a job but, actually, socially, is not of great use to society.”*

*“Well, the NUS is involved in all sorts of environmental issues, as a core part of what we do, and we have done that because students are really worried about things like climate change. We, working with the Department for Energy & Climate Change, survey students every year, and we know that students are at least as worried as the general public, if not more so, and when you unpack that, first, it’s because they are worried about things like climate change, but secondly, it is because they see it as an opportunity. There are nearly a million unemployed young people in this country and the moment, and knowing a bit about climate change or sustainability or anything to do with sustainable development may be able to help them get their foot on the careers ladder and get them their first job.”*

If we just look at the National Union of Students’ survey – this is the most recent one in 2014 – one of the things it did was it asked to what extent students agreed that universities should be obliged to develop students’ social and environmental skills as part of the course, and you will see there is a very consistent picture there. I cannot do the arithmetic, but it is something like 70% of all students think that they should be obliged to teach that as part of the course. That is a pretty radical suggestion actually for most British universities, with their strong traditions of academic freedom.

There is another question that was asked in the survey, “Do you personally agree with the statement that “Sustainable development is something that I would like to learn more about”?” and again, you can see, 61, slightly less than say it should be part of the course, say they personally would want to have it as part of their course.

So, I think we can say that this is an important matter for students and for other agencies as well.

Now, I want to turn my attention to something called the Green League tables and just look at the extent to which institutions have apparently made this progress towards the great vault of greenness in the sky.

The Green League was something that was established by a student-led campaigning organisation called People & Planet, which started in Oxford in 1969. They published the first Green League tables in 2007. There were some things before that. But they still claim to be the only comprehensive and independent ranking of UK universities, in terms of their environmental and, latterly, their ethical performance. So it is something of a benchmark, and initially, it started off with really information about university policies and management arrangements, so it said things like “How many staff have you got who are involved in environmental management and do you have a policy on it?” which those things are really not measures of output or impact actually. They are measures of what you are putting into it, not what you are getting out of it. But then, in subsequent years, it began to include other information about the actual performance of university grounds and buildings. So, we see, if we look at this over the years, and this is the 2007 “First Class” performance, but if you summarise all the information for all the classes, that, for example, the use of renewable energy in universities has increased from about 12% in 2007 to about 75% today, which is actually rather remarkable.

Now, each institution has a calculated index, and this is the summary, or the top part of the tabulation, for 2007, using the indicator as calculated today, and you can see there the top few institutions, and I am going to show you in a minute the figures for 2014. But this original league, the 2011 league, included 117 institutions, and they got the data for this by interrogating the web, largely, so it was an involuntary thing. Most institutions had some data on the web, and it was included in the analysis, and then some scores were calculated and that gave you the top group, which were given First Class marks.

Now, I think there is some interesting elements to this. One major problem is that, as I said, particularly latterly, participation is effectively voluntary, and some institutions choose not to participate, but actually, this last year of publication, in 2013, 143 institutions participated, which is a very large number. It is a clear majority of universities, and one or two FE colleges as well. It will be fewer in 2014’s tabulations because there has been a big argument about it. Of course, this is not unexpected. Each year the league runs, there is protest about organisations that have taken a tumble, and they usually say things like it is the nature of the calculations is wrong or the opposition, or the competitors if you like, have provided dubious data – the data is wrong or there are bits missing and so on. I actually have to say, I think, if you compared that to the way students would describe being assessed in finals by saying “Well, I was not quite ready,” or “I have not done all the data,” or “The book was not in the library,” you would see certain parallels there, so I would say universities probably ought to be quite familiar with that as an approach. Saying “We did not know what the questions would be” is not really an answer.

However, if we look at the characteristics of this table, the top – I will spare the blushes, or most of the blushes of the ones who were rated as Third Class or Fails, but you can see, the top five institutions – Leeds Met, Plymouth, Hertfordshire, Glamorgan, and Gloucestershire – are all new universities who had gone through this transition in the 1990s or later.

Just for your information, Cambridge came in 8th and Oxford 27th. Now, that was not very comfortable for those institutions of course, and by 2013, the situation is even more polarised. The top five were somewhat similar – Manchester Met, Plymouth, Gloucestershire, Worcester, and Brighton. Cambridge had dropped into obscurity at 113th, and indeed, only four of the 43 institutions that got First Class grades were from the prestigious ranks of the Russell Group. Actually, for information, it was Bristol, Exeter, LSE and Newcastle, and none of them were in the top 10.

So, it created a lot of upset. Of course, it is not very common for Oxford University to be ranked 125 places below Oxford Brookes and with a Fail grade. Oxford Brookes got 7th and actually, for Oxford – I have to say this, as somebody with an association with Oxford myself – whereas Oxford got a Fail, Cambridge scraped a Third…

So, the modern universities are competing effectively, and they do not share common locations in green and leafy suburbs or they do not share what I might call “metropolitan funkiness”. What they do share is a very strong centralised managerial culture.

Back in 1992, as I said in the case of our story of Borsetshire, their concern was to satisfy the UK Quality Assurance Agency of their ability to maintain standards, so when they were told what to do, by and large, they did what they were told.

And, in addition, I think many of them had stronger links with their host communities. Many of them had been polytechnics, with links with local employers and so on.

So, the new universities were nervous at violating the regulations established by Central Government for standards. Academic staff were more used to being told what to teach and when to do it, whereas, their Ivy league counterparts were much more fiercely defensive of academic freedom, and much more likely to resist demands for compliance.

Okay. Now, what I am talking about here is grossly generalised, of course. Those community links though, which underpin many aspects of our understanding of sustainability, are very commonly reflected in the mission statements of the so-called “modern” universities.

If we looked, as I did, in the late-twentieth century, at Liverpool University’s mission statement, for example, an older university, it centred around the production of Nobel Laureates, whereas, the local modern equivalent was talking about its links with local businesses. So, the modern university is much more closely linked, through sandwich courses, through placements for work experience and so on, with their local communities, and it wasn’t very difficult for them to develop that further into areas of community engagement for students and, in some cases, for staff.

Now, it begs a bigger question, this, about the purpose of education. I have just highlighted here Einstein’s approach to this, which I think is rather good. He talks about “the training of independently acting and thinking individuals, who, however, see in the service of the community their highest life problem”. There is no reflection of research in that, which is interesting, I think.

I want to play you some very short extracts of individuals talking about their conception of universities today…

[Extract plays – multiple speakers]

**Professor Pauline Kneale, Pro Vice Chancellor Teaching and Learning at Plymouth University**

*“So the role of modern universities is to equip students with the skills and the knowledge to challenge and engage with ethical and sustainable practices in all aspects of their academic career and the ways in which things are applied in their working life and environments.”*

**Dr Tom Arnott, Water Innovation Centre at the University of Bath**

*“I think the role of universities within the opportunity to address environmental challenges is, at one level, bringing new research opportunities and technology opportunities to industry, but also, and very importantly, imparting new knowledge and new strategy and new thinking to graduates and postgraduates, who then become involved in those industries.”*

**Ian Patton, Chief Executive for the Environmental Association of Universities and Colleges**

*“Universities have an utterly critical and, I would say, a unique role in bringing science to everyone. They have not just an opportunity but a responsibility, and to ensure that every graduate leaves with a basic scientific understanding, but of course then, we do need the specialists to be leading scientific-based solutions to our problems, not just our environmental problems, that recognise that you can’t just solve scientific problems in isolation. There are economic and social perspectives that have to be addressed. That is a big challenge to our universities. I think many universities are up for the challenge, but it’s not an easy thing. You know, we’ve had hundreds of years of scientific research, in a sort of relatively narrow disciplinary perspective, and I think our structure has become quite siloed, and I think it’s difficult for universities to step back and shake it all up.”*

**Professor Stephen Sterling, Head of Education for Sustainable Development, Centre for Sustainable Futures at Plymouth University**

*“I think universities can be seen as having a two-fold role: one is to develop a basic level of awareness and understanding of environmental issues, so that society broadly has an understanding of these issues, which are increasing in character, so that, at a personal, societal and policy level, we can make the right decisions; beyond that, we need a cadre of people with sufficient expertise to address the issues at a more technical level.”*

**Dr Elizabeth Wilson, Reader in Environmental Planning at Oxford Brookes University**

*“I think universities have a really important role, three roles really: one is in terms of offering opportunities for interdisciplinary research – I think universities are, and should be, interdisciplinary; they also have a remit I think and responsibility to their own local areas that they’ should be working – and Oxford and Oxfordshire and the Chilterns, for instance, are a really good area to be working in to see how these things work in practice; and then they have a role to educate the next generation of both researchers and of people who are going into practice through professions, such as planning, real estate management, architecture, as well as arts and ecology.”*

So, those people have flagged up a number of potential roles for universities, including teaching, research, both, community engagement, innovation… At least one person talks about leadership. I would like you to just listen to this one though…

**Dr Chris Willmore, Reader in Sustainability and Law at the University of Bristol**

*“Governments are constrained by elections. It’s difficult for a government to do something that’s unpopular. Universities don’t have that constraint. A central role of universities in society is to say the unthinkable, to challenge people, to say unpopular things that just have to be inconvenient but true. Universities also have a central role in education. It’s often said that graduates do more harm to the planet than anybody. Universities need to turn that around so that our graduates come out with both knowledge about the challenges the planet faces, but also with the practical skills to get out there and do something to make a difference, so that they live their lives in a way that is more sustainable.”*

Okay, so what we here there is somebody from an old university saying universities also have a role in saying the unsayable, alongside their educational role.

Everybody, I think, almost everybody, mentions research, and for many people, that is the raison d’etre of universities. We do have, in the UK, world-leading environmental research. I touched on this earlier and I want to reiterate it. I have just pulled in three examples here.

We have the Met Office weather and climate modelling research. The Met Office, linked with universities actually, produces some of the most powerful science in the world, and there are, equally, other analyses following on from that looking at the social and economic implications of some of that research on climate change. I would sort of exhort you to contemplate that, despite the fact that today’s Daily Telegraph was trumpeting the fact that climate scientists are now saying they got it wrong about the extent of climate change, which, in my view, is a misconception about the way in which scientific research evolves, but notwithstanding their view, the Met Office does very good environmental science.

Here is another example of environmental science. This is looking at change in soils in East Anglia as a result of drainage. You will see here monitoring equipment which is looking at reflectance characteristics of soils actually. It is from the University of Leicester.

**Professor Susan Page, Head of Department of Geography at the University of Leicester**

*“Some of our research that we’re doing in the Department is focusing on the impact that agricultural use of fenland soils – these are peat soils – is having on greenhouse gas emissions. We are carrying out research in East Anglia, which has a very large area of land under agricultural production, but on these carbon-rich soils, and what we want to do is to establish how, perhaps, by changing the way in which the land is managed, we could reduce the carbon footprint of the foodstuffs.”*

*This research is innovative, perhaps surprisingly, because we are one of the first teams to actually ever investigate the impact of agriculture on lowland peat soils in the whole of the UK actually, and this type of research is also quite new even in other parts of Europe which also have large areas of lowlands peatlands being used for crop production.”*

I should emphasise that these are just examples of world-leading research. I want to offer you one more. I do not have a sound file for it, but just a different kind of example. This is an example of a spinout company from the University of Nottingham. It is a company now called Azotic Technologies and it is based on twenty years of research, a very long timescale for research, around nitrogen-fixing bacteria which are being put onto seed coatings. The bacteria are taken up into the plant, into every cell in the plant, and they enable the plant to act rather like a legume, taking nitrogen from the air, rather than requiring high levels of nitrogenous fertilisers, and clearly, that is a very, potentially, that is a world-beating technology, really likely to affect the economic characteristics of agriculture right across the world. They are doing the first analyses of trials at the moment in fact.

So, we have many examples of world-beating research. Now, does that matter? What is the point about that?

**Ian Walker, Head of Innovation at WRc plc**

*“Underpinning all of the decisions that the water sector and the environment sector take has to be robust science. You shouldn’t be doing anything unless you’ve got evidence. [One of my] fundamental principles is: you only make decisions when you’ve got hard evidence. You get evidence from good science. It’s a quaint phrase, “good science”, but unless you really do good science, you won’t get good evidence, and if you haven’t got good evidence, you’ll have bad decisions. One of the problems with good science is it actually takes time, and I think the industry is driven to make decisions too quickly - they’ve got profits to make, they’ve got bottom lines to achieve, they’re in a five-year cycle. A good bit of research could take 10 years to collect the evidence.”*

I will give you another one here…

**Dr Graham Leeks, Head of Science Co-ordination at the Centre for Ecology and Hydrology**

*“I think one of the most impactful pieces of work that the Centre for Ecology and Hydrology has carried out, if I look back through recent decades, was to develop the first flood risk maps for the UK, which presented, in a very simple way, the areas which were vulnerable, and that was made available both to policymakers and was also a very simple vehicle for the public to understand the levels of risk, and I think that has been impactful and has a number of follow-on stages where these maps have got…been made more sophisticated, both by CEH and many other organisations.”*

**Sir Ron Cooke, Former Vice Chancellor at the University of York**

*“I mean, we have a very good track record in this country of scientific contributions to understanding environmental problems, but I do see a serious issue in the sense that state-funded scientific research has dramatically reduced in recent years, despite the fact the funding councils continue to flourish, and by that I mean that privatisation of many industries has led to the reduction of their research. The Central Electricity Generating Board, for example, had major research laboratories in Leatherhead, and when they were privatised, when the company was privatised, those laboratories closed, so that research, in terms of electricity supply, distribution and environmental implications of it, went, and I don’t know where it’s gone. I suspect we’re not doing it. Where the research is now, I don’t know – I suspect it’s abroad, if it’s there at all. That would explain, of course, why so many of our infrastructure development projects are in fact done by foreign companies.”*

So, Ron Cooke there is making a point about research and, indeed, the earlier couple of speakers there were making points about some research needing to be in universities, needing to be long-term, being needed by the industrial sector for the health of our economy.

Now, I want to conclude my talk by making an important point about the links between university research and greenness in our universities. We have research treasures here. We have seen we have research treasures, universally recognised I think by the speakers here. In my opinion, those research treasures should be the source of inspiration to those people who are seeking to green their universities and to improve their environmental performances, but when we look at that in a structured way, when we analyse the relevant information, that link is just not present.

Some of you will be aware that, in the last couple of weeks, the Research Excellence Framework was published for British universities, which is an analysis of peer-reviewed indicators, if you like, of the quality and impact of research in all those departments that submitted. It was a massive…it’s a massive exercise, an enormously costly exercise. I have just taken a couple of bits of data here, and what you see on the graph here is, on the bottom axis there, it is the People and Planet Green League rankings, where you have got, on the right-hand side, 1, or 0 actually there, but ranking from 1. So, on the right-hand side of the diagram, you’ve got those institutions which appeared at the top of the Green League tables, and on the left, you have got those that appeared at the bottom. On the vertical axis, you have got the Research Excellence Framework rankings for – actually, it should be, where it says “Earth and Environmental Sciences” that is more or less the title. So, again, you have got the top-ranked research departments at the top, and the lower ranked ones at the bottom. Now, if any of you can see any association between those two things, you are doing better than I am! What it is telling us is that there is actually no relationship at all between having the expertise in environmental matters within the institution and actually doing something with it to further the cause of the institution.

There are different datasets. There is another one here which, in this case, the People and Planet ranking is up the side, and there is a measure of Research Power, which is a multiple index reflecting the quality of the impact and how many people are doing it, in research terms, and there is really no relationship there either.

So what we are saying then? Just to reiterate, the performance of institutions in the Research Excellence Framework is not reflected in the performance in the Green League Tables – they are no association at all, and as far as I can see, any analysis of any of the data shows the same thing. The net effect of that, in my view, diminishes our efforts to address environmental challenges. It is one of the many disconnects, the many communication failures that beset us in terms of relationships between disciplines, between universities and businesses, and so on. I talked about that in my last talk, drawing on the work of Nancy Roberts. I talked about it in the context of “wicked” problems. But I want just to play you one last person talking about this and about disconnects…

**Chris Woods, Chartered Architect and Chief Executive at Value Co-Creation Ltd and Visiting Professor at the University of Salford**

*“Universities have got a key part to play in the technological advancements and also the scientific advancements. Most industry in the world is focused upon profits that would be generated, in a forward business plan which is no more than three years in advance of where we are now. We need to be addressing challenges which are a little bit further away than that. We need to start to have solutions to the problems of 2020 being worked on right now. A lot of industries in the UK don’t think that universities provide anything more than new starters. They don’t think about the science and technology that universities have developed, could develop, and could move forward. Most businesses are so risk-averse they can’t think about how they could operate with a university. We’ve got issues in the UK. At the moment, there is a vicious circle, where universities are not serving industry as well as they need to: industry is not employing universities as much as they need to. The people who are educated are not being educated in cutting-edge technologies, and education is not providing the graduates or the new entrants that industry needs, and our very old-fashioned way of looking at universities and three-year, or longer, degrees, doesn’t necessarily serve industry very well.”*

I am going to leave you with this slide, which is the one I put in my last talk, which is really talking about the need for collaboration. We have heard there Chris Woods capturing the disconnect between universities and businesses. My analysis suggests there is disconnect within universities. In my next talk, I am going to be looking at the role of professional bodies in mediating some of these relationships, but I think, in order to move forward positively to the next step of evolution, the next step up that ladder towards the heavenly position of better environmental performance, I think what we need to do is perhaps not emphasise the science, or indeed perhaps the teaching, but the matter of communications, and we need to do that proactively and urgently.

Thank you.

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