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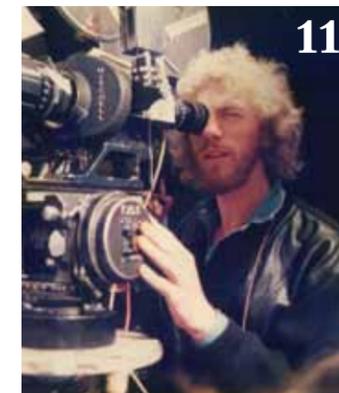
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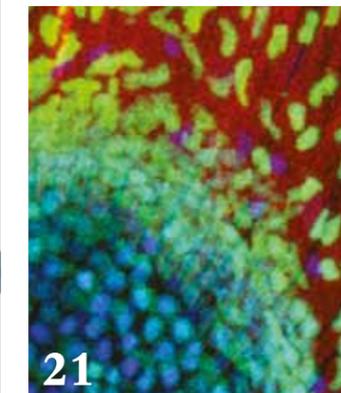
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From Bristol to London

Freya Sterling interviews **Maxine Room** (BEd 1979, MEd 1993), Principal and Chief Executive of Lewisham College, London



My mother encouraged a positive approach to learning. She believed that we could overcome any barriers. She made me believe that anybody could achieve what they wanted to in life, regardless of race, gender or disability.

Originally, I trained as a teacher and loved it. I taught vocational courses, GCSEs and A-levels in a range of subjects such as social sciences, childcare, health and social care. My desire for inclusivity was sparked while I served on the equal opportunities group at Bridgwater College and it steered me towards doing a Masters degree.

I wanted to write something academic in the area of equalities. After I had been teaching for a few years I had the urge to write and decided on a Masters degree at Bristol focused on multicultural education and equalities.

My MEd helped me over the teaching threshold and into management. I have always reviewed my career without thinking about my race or ethnicity. However, when I was appointed at Swansea College in 2003, I was the first black principal of a further education (FE) college in Wales and the second in the UK. The fact that there are remarkably few black and minority ethnic (BME) senior managers in the FE sector indicates that there are underlying factors still to be addressed.

For as long as I've been a principal, I've been a mentor. I believe that, as a sector, we have the responsibility to bring on the next generation of leaders and managers. Initially, I began mentoring as part of the Network for Black Professionals and the Black Leadership Initiative working with BME managers and senior managers in FE colleges. My role was to support them in progressing upwards into their next role.

As a trustee of the Helena Kennedy Foundation, we also strive to overcome social injustice by providing financial bursaries, mentoring and support to disadvantaged students from further and adult education sectors. We ensure that all those who want access to education can get it, for the purpose of sustainable employment and not just education for education's sake. This is something which is also inextricably linked with our vision at Lewisham College.

Lewisham College is a member of the 157 Group of high-performing colleges, and has a population of 16,000 students and growing. This is my third principal/CEO role and despite the ever-changing financial climate, my focus is on growing our vision of creating successful futures and working in partnership with other colleges.

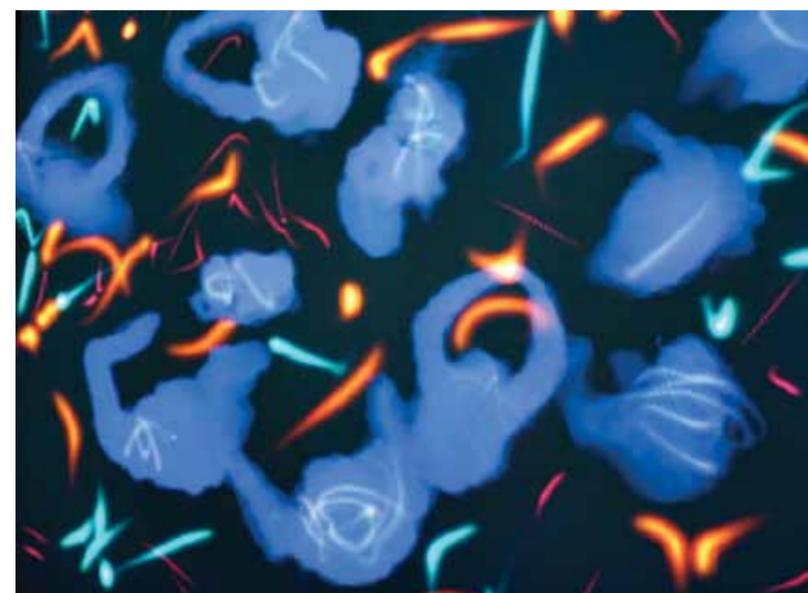
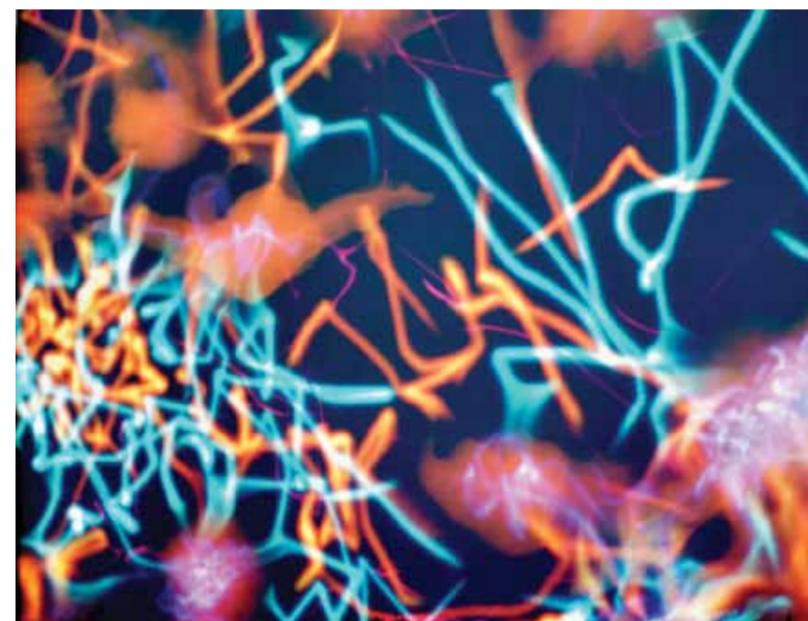
By working together in FE education, we'll be able to become more effective and efficient. We will be able to offer better choices in the curriculum, and ensure links with employers and solid progression routes for our students. The modules I did at Bristol helped to frame my thinking to this day, in terms of self-development and equality, and laid the foundation that has helped me to become the manager I am today.

ANYBODY CAN
ACHIEVE WHAT
THEY WANT IN LIFE
REGARDLESS OF
RACE, GENDER
OR DISABILITY

Portrait © Stephen Shepherd

The light fantastic

Nobody knows what the quantum world looks like. But scientists and artists can't help wanting to picture it. **Dr David Glowacki** has pioneered a more imaginative approach than most, with help from a programmer, a choreographer, a musician, and an assortment of other artists and academics.



Above Images from the Danceroom Spectroscopy event at Arnolfini

By Nick Riddle

In a large, darkened room, people are moving their arms around slowly above their heads and watching their own silhouettes interact with brightly-hued, protean shapes on a giant screen. It looks a little like a 21st-century séance ... but it isn't. It's a mixture of quantum physics, classical physics, art, computer code and human beings. And it's called Danceroom Spectroscopy.

The 'Danceroom' part is probably self-explanatory. 'Spectroscopy' might be another matter.

'Spectroscopy is the use of light to obtain information about matter,' says Dr David Glowacki, a chemical physicist (among other things, but we'll come to that), and the brains behind this striking science/art hybrid. If a spectrometer sounds like a niche item of equipment, think again: most of us have two of them. 'Our eyes are actually little spectrometers,' says Glowacki. 'But eyes have limitations: they can only resolve change that happens on relatively slow timescales, and there's a lot they can't see.' Different kinds of light, for example, or the microscopic and nanoscale world.

Scientists have a similar problem, he explains: 'We're always imagining what the microscopic world looks like. We're a little obsessed with fictitious representations, in fact – balls and sticks, blobs, terraces, cavities, ribbons, sheets. The truth is, we don't know exactly how it looks, but we make pictures anyway.'

Putting on a show

Danceroom Spectroscopy is a new attempt to visualise the atomic world, but with a difference: it puts us into the picture. A suspended 3D imaging camera captures the movements of people below; that motion is fed into a laptop and translated (via software) into energy fields, which in turn warp the particle dynamics of a simulated nano-world. It's similar to the effect of a pebble dropped into a pool, only the pebbles get to watch themselves, and the complex ripples they create, on a projection screen.

It's an experience for the ears as well as the eyes: the human interactions with these simulated particle fields are mapped onto musical scales to generate a soundtrack of tones, melodies and rhythms. And that, it turns out, was the starting point for Glowacki.

'It came out of a conversation in the pub with a musician friend of mine, Lee Malcolm,' he explains. 'I was getting frustrated with the music-generated-by-motion idea, which has

Feature

been done to death, and I started thinking about different approaches to it, inspired by my day job as a scientist.' Only then did he begin to realise the potential his ideas had for opening up the world of quantum mechanics, using the same algorithms he employed in his research.

With a grant from the Engineering and Physical Sciences Research Council and support from Professor Mike Ashfold in the School of Chemistry, Glowacki sought out collaborators: Phil Tew, a programmer from the Pervasive Media Studio at Bristol's Watershed; Laura Kreifman, a dancer and choreographer from the Guerrilla Dance Project; artist and designer Becca Rose; and Professor Joseph Hyde from the Music Department at Bath Spa University. After series of tryouts in small venues, Danceroom Spectroscopy had its first proper outing at Arnolfini on Bristol's Harbourside in the summer of 2011.

Particle man

Glowacki's job title – Research Assistant in the School of Chemistry – doesn't come near to doing justice to the scope of his interests. Born in the States, he studied philosophy and comparative literature alongside science subjects as an undergraduate. 'I've always been fascinated by the ancient philosophers who did everything,' he says: 'some science, some philosophy, some music, some art...'

He came to the UK as a Fulbright finalist to do a Masters in cultural theory and religion ('I studied how George W Bush turned Christian

IN SCIENCE IT TAKES A LONG TIME TO GET STUCK IN – YOU CAN'T BE SUPERFICIAL

ideology into military strategy during the War on Terror'), before concentrating on science. Since then, he has published papers on topics in classical and quantum dynamics, biochemistry, computer programming, atmospheric chemistry, scientific instrument development and optics.

How does he manage to cover so much ground? 'I don't sleep that much,' he admits. 'The most difficult part is pulling myself out of concentrating on one thing and moving over to something different. In science it takes a long time to get properly stuck in – you can't be superficial. But like most things, the more you do it, the better you get at it.'



Above Dr David Glowacki

For the average person, giving equal attention to such a panoramic spread of interests would be as challenging as trying to visualise the quantum world. To Glowacki, it's second nature.

'At heart I'm a scientist, in the sense that I'm systematic in my approach to knowledge,' he says. 'But I think I'll always maintain a range of specialisations; I don't have the makeup for anything else.'

Going towards the light

Now that science is addressing topics of ever greater complexity – environmental sustainability, next-generation fuels, reforming the economic system – the benefits of having omnivores like Glowacki on hand are obvious. One large-scale project he has just begun to think about concerns the physics of photosynthesis.

'Plants turn sunlight into fuel,' he explains, 'and there's evidence to suggest they may be exploiting some wave features in quantum mechanics to get the energy from the surface of the leaf into the centre of the cell where the chemical reactions happen.'

Getting to the bottom of that process would involve collaborations with biologists, physicists, mathematicians, chemists, engineers ... in other words, it's right up his street. ●

davidglowacki.wordpress.com/arts

Danceroom lessons

Glowacki's work shows how an imaginative approach to science and art can appeal to both the scientist and the lay person.

Watching people interact with the virtual particles is itself a lesson in human behaviour: Glowacki has seen a kind of accelerated human evolution, as individuals move from solitary, tentative interaction to choreographing their movements with strangers in order to create more dynamic patterns. 'We had a group of schoolkids trying it, and everyone wanted to keep their particles to themselves,' he says. 'The sound stopped, and nothing much happened on the screen until they started sharing and collaborating.'

Wider audiences will get the chance to try collaborating as Glowacki is taking Danceroom Spectroscopy to the 2012 SXSW festival in Texas, along with plans to put on a wave-themed installation in a 360-degree surround projection dome, at the 2012 Cultural Olympiad in Weymouth.

Portrait © Jason Ingram // Danceroom spectroscopy images © Sam Saunders

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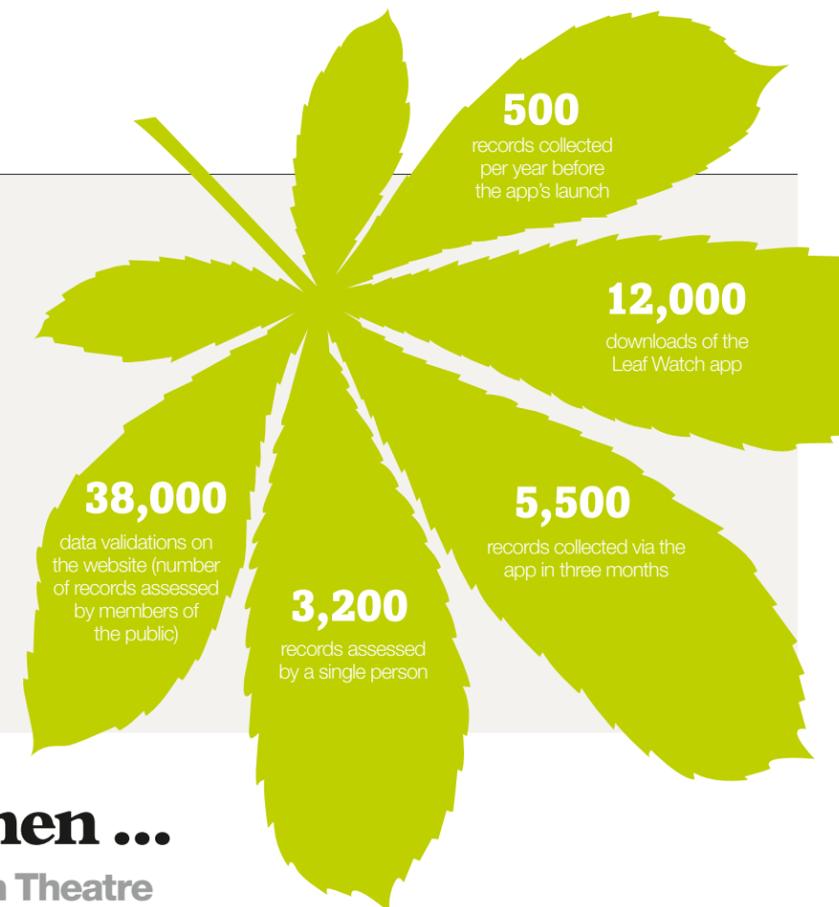
Numbers

On the trail of the killer moths

A project by the Universities of Bristol and Hull has been tracking the incursions made by an alien moth, the horse chestnut leaf miner, a scourge of the UK's conker trees since 2002. In 2011 the project launched a smartphone app, funded by JISC and developed by Bristol's Institute of Learning and Research Technology.

The Leaf Watch app enables users to send their images of leaves damaged by the moths, along with metadata that is then assessed by other users. It was featured in the national media and received a boost after being tweeted about by Stephen Fry.

leafwatch.naturelocator.org



What happened when ...

... 'Sledgehammer' hit the Wickham Theatre



It's one of the most famous pop videos of all time, with a record nine MTV Video Music Awards, and it helped propel a young company called Aardman Animations into the big time. But in the spring of 1986, the creation of the promo video for Peter Gabriel's single, 'Sledgehammer', was bringing chaos to the Drama Department's Glynne Wickham Theatre.

'Peter wanted to use a director called Stephen R Johnson, who'd just done the video for Talking Heads' 'Road to Nowhere'; says Dave Alex Riddett (Cert 1978), who was Principal

Cameraman on the production. 'But he wanted it done in England with a UK crew.' So Aardman got the call.

Having shot the early sequences in Aardman's Clifton studio, the production needed a larger space for the final animated dance sequence. Aardman had used the Wickham Theatre for one of its first advertising commissions (for Enterprise Computers in 1984), and returned there with Gabriel and the crew (augmented by Drama students and staff) for two days of shooting. 'We had six large backdrops that we also

animated,' says Riddett, 'and every two frames we had to change the scenery. You hardly notice in the final video, but things in the background are moving all over the place.'

The extras included some local girls recruited from St Paul's, whose excitement at being in a music video faded somewhat after the first seven

EVERY TWO FRAMES WE HAD TO CHANGE THE SCENERY

hours. 'They had to dance frame by frame, and hold position while we moved props around,' says Riddett. 'It was all done on the wing: Steve kept having these crazy ideas and changing his mind about where he wanted to cameras to move. Eventually the girls said, "We don't want to do this anymore, we're exhausted!" So we animated some chairs coming in. That's why they're doing the last bit sitting down.'

'The shoot ended around 2 am, and we kept animating ourselves having the wrap party,' he adds. 'I've no idea where that footage is now.'

Above Peter Gabriel and the 'Sledgehammer' crew, including Dave Alex Riddett (Director of Photography on Aardman films including *Chicken Run* and the forthcoming *Pirates!*); Nick Park (Hon D Litt 1997), David Sproston (Hon LLD 2010) and Peter Lord (Hon LLD 2010) (who turned Aardman – and Wallace and Gromit – into household names); and the Quay Brothers (makers of highly acclaimed films such as *Street of Crocodiles*).