



Science and Heritage Conference

Podcast Transcription

VO: Although the UK had always enjoyed a strong tradition of science-led cultural heritage, by the early part of this century, the feeling was its impact was beginning to dwindle. So in 2007 the AHRC/EPSRC Science and Heritage programme was established to address the concerns, by simply re-establishing the UK's position as leaders in the international cultural heritage field, helping to encourage broader collaborations across disciplines and support more meaningful relationships between researchers and industry. At the 2013 Science and Heritage Conference, science minister David Willetts in his address to delegates emphasised how much had been achieved by the programme in a relatively short space of time.

DW: It's helped to maintain access to our past in a period of not just financial pressure and financial change, but also with literally a changing physical environment, and climate change and changes in the temperature and environment and the humidity in which some of our objects have to be preserved is another great challenge and you've really put that on the agenda. There's been progress in non-invasive archaeological and preservation techniques enabling our cultural heritage to be studied and protected without being disturbed, and also there is, and we shouldn't be embarrassed by this, an economic payoff, our heritage is one of the reasons we have such a vibrant and healthy tourism industry which brings over £50 billion to the British economy.

VO: Professor May Cassar is the director of the AHRC/EPSRC Science and Heritage Programme. As someone in at the start, she's seen some 48 projects undertaken, involving 200 researchers and engaging the experience and expertise of over fifty SMEs and companies. This level of engagement, she argues, has been one of the major successes of the programme.

MC: This is not just different types of academics and academic disciplines talking to each other, This is about opening it up and engaging with the heritage community in defining the research questions, what are the issues out there: is it about understanding and presenting the heritage? Do we need to interpret it better? How can heritage science through Computer science, through visualisation, through digitisation, present different aspects of Heritage in ways that are engaging and exciting. So collaboration is the name of the game.

VO: Dr Gillian Walker's work using powerful, non-invasive scanning techniques to reveal hidden wall paintings, is a good example of how those involved with cultural heritage research need to be asking the right questions - especially if the results are to have any value or significance. Dr Walker, a post doctoral research fellow at the University of Reading, describes how such work can prove beneficial to both our level of understanding as well as help create economic advantage.

GW: Preserving our cultural heritage is important, I mean we had the talks about that this morning about the income revenue of cultural heritage research, about understanding the history, there's a lot to be learnt from, how people valued their cultural heritage, how cultural heritage has changed in order to reflect changing societies' changing cultural practices. To be able to look at how, particularly

mural paintings, change over time, how people treat them, why they change them, why they change them the way they do, gives you A lot of context about that particular culture and I think that is always useful to use information about how we've adapted to a large amount of change in the past and that is often reflected through what's happened to cultural heritage.

VO: Seeing things in context - and seeing things from different perspectives - has also been at the heart of Dr Philip Lindley's research into a group of 16th century tombs at Framlingham Parish Church in Norfolk. The tombs, which were moved from Thetford around the time of Henry VIII, have proved to be a three dimensional jigsaw puzzle for scholars, but working with enhanced scanning techniques - techniques more often used by engineers than art historians - Dr Lindley has been able to piece together the complex story of these tombs. At the same time, the project has successfully proven the benefits of collaboration - and presented several new opportunities...

PL: Using 3-D scanning technology which is now very widely used, we have been able to scan the monuments, that is absolutely conventional now, taking the monuments apart virtually, that's unusual, applying this kind of reverse engineering to a cultural artefact, that's new but I think the primary novelty is working as a collaborative team, with physicists from the Space Research Centre, historians from Oxford and Yale, art historians and museologists. But I think the other thing that is new is that we present this as absolutely a voyage of discovery. We know that we could be wrong, our predecessors we think were wrong, what we're doing is giving everybody the data and saying this is what we think, what do you think?

VO: Helping solve this 450 year old puzzle was Neil Jones from Europac3d, the engineering company who used their three dimensional scanning techniques to virtually re-construct the Duke of Norfolk's tombs. As a result of their collaboration with the cultural heritage sector, the firm has now set up a spin off company specialising in historical artefacts. As Neil Jones explains, they've learned that it's not just engineering that can benefit from this kind of technology.

NJ: Museums can use 3-D scanning as A tool for archiving for example, or if there are visually impaired guests who want to experience what's in the museum they can do it with a 3-D print which has been scanned and do that than rather potentially damage the original artefact. So there are all sorts of possibilities and working with faculties it just allows another market sector to gain from the technology and do what they want to do cheaply and quickly.

VO: In line with this thinking, the Programme has been supportive of the wider, more long term economic benefits of cultural heritage research. Nancy Bell, a member of the Science and Heritage Advisory panel and deputy chair of the Science Heritage Forum, recognises how many of the projects being undertaken have realised potential not just for the cultural heritage sector, but for UK PLC as a whole.

NB: We've built and delivered a new generation of heritage science professionals who aren't just working within the strict terms of museums, libraries, archives. We had a Ph.D. student who is now working in industry and if we can encourage more and more people to develop tools and technology that's great for UK plc. Preserving our heritage is about contributing to that 8% of GDP, but I think also we have a little bit way to go, but the public are seeing the benefit of heritage science and if they can see it, well then it's good for taxpayers generally.

VO: And thinking about public engagement for a moment, several of the Science and Heritage research projects have set out to ensure their work reaches out to communities interested in their findings, from discovering more about tombstones in their local parish church, to even learning why heritage smells.

LG (actuality): Well, Simon and Jonathan, I'm going to now invite you to take part in our Smeller's Quiz, and the idea is to try and link the sense of smell to an object but without using your eyes and without touching it, just the sense of smell alone to see how difficult it is for your brain to process just that unique piece of information. So in these pots...

LG: I'm Lorraine Gibson, I am the principal investigator of this research project which is entitled "Heritage Smells", by the chemist and I work at the University of Strathclyde, Glasgow. Paper is a good example - when paper breaks down it goes into smaller fragments, into smaller pieces and a by product will be an even smaller molecule that you can emit into the air and that small molecule that emits into the air is what you can smell. Now we don't use our nose to identify what that molecule is, we use chemical instruments and methods to see what it is, for example, if you see a compound called acetic acid, many people might not know what acetic acid is, but if I tell you it's a vinegar, you'll instantly know what the smell is, and if you smell vinegar in an archive that's a very clear indication that the paper is breaking down and producing the small molecule that's emitting into the air.

VO: Taking part in that smelly heritage test was Simon Cane, deputy director of the Birmingham Museum's Trust.

SC: It is an issue, and I think one of the interesting things about this research is that by the time we smell it it's probably too late, so with this heightened diagnostic use we can actually get ahead of the game, so we'll get early warnings about making decisions about what we preserve and what we don't preserve, so there's a real serious side to it.

VO: The Science and Heritage Programme then is proof positive of what can be achieved when disciplines combine to create new, improved ways of understanding the cultural heritage that's all around us. As Dr Lorraine Gibson acknowledges, without these collaborations, work like her's might have remained stuck on a shelf gathering its own layer of archival dust.

LG: I'm a chemist, I work with physicists, I work with conservators, we work with archivists, librarians, so there is a very nice mix of academics and end users, and we have to work together in a team, it has to be collaborative in order to answer the right questions at the end user needs, to be able to inform their practice and change their methods so that what they do on the ground is better, faster and easier and more cost-effective, and without that team working you really wouldn't get the correct result. So this platform, where it was deliberately set up to bring together people from the arts and humanities, and the science background, was just a phenomenal experience for me, it was the right way to do it, the interdisciplinarity of it made it work, and that was definitely the success of the Science and Heritage Programme.