



## Preventive conservation and the environment: Summary of IIC Hong Kong Congress panel discussion

Jo Kirby Atkinson

To cite this article: Jo Kirby Atkinson (2016) Preventive conservation and the environment: Summary of IIC Hong Kong Congress panel discussion, *Studies in Conservation*, 61:sup1, 3-11, DOI: [10.1080/00393630.2016.1166015](https://doi.org/10.1080/00393630.2016.1166015)

To link to this article: <https://doi.org/10.1080/00393630.2016.1166015>



© The International Institute for  
Conservation of Historic and Artistic Works  
2016



Published online: 12 Aug 2016.



Submit your article to this journal [↗](#)



Article views: 1207



View related articles [↗](#)



View Crossmark data [↗](#)

# Preventive conservation and the environment: Summary of IIC Hong Kong Congress panel discussion

**Jo Kirby Atkinson**

IIC, London, UK

When the technical programme for the IIC Hong Kong Congress, held on 22–26 September 2014, was drawn up, a discussion on environmental conditions for the display and storage of cultural heritage objects, with a particular emphasis on the concerns and opinions of local conservators and within the East Asian conservation community in general, was planned from the outset. As the Congress took place the week after the International Council of Museums, Committee for Conservation (ICOM-CC) Triennial Congress held in Melbourne, during which the ICOM-CC and IIC Draft Declaration on Environmental Guidelines was produced and discussed, the discussion session also provided an ideal opportunity to introduce the draft to a different audience and obtain their comments and opinions. This is a summary of the panel discussion, held on Thursday, 25 September 2014, which was recorded on film and may be seen in full by following the links from the IIC website (<https://www.iiconservation.org/>).

**Keywords:** Air conditioning, Carbon footprint, Environmental conditions, Environmental guidelines, Loans, Relative humidity, Set points, Temperature

The members of the panel were introduced by the Chairman, Sarah Staniforth, IIC President. The panel comprised Jo Kirby Atkinson, Secretary-General, IIC; Julian Bickersteth, Vice-President, IIC; Vinod Daniel, representing ICOM-CC; Dr Lynne DiStefano, Adjunct Professor of the Architectural Conservation Programmes, Faculty of Architecture, The University of Hong Kong; Dr Jirong Song, Deputy Director of Palace Museum Beijing and Director of the Conservation Department; Jerry Podany, President-Emeritus, IIC; Dr Richard Wesley, Director of the Hong Kong Maritime Museum; Dr Junchang Yang, Director of Shaanxi Provincial Institute for the Conservation of Cultural Heritage (Fig. 1).

The audience had received a copy of the Draft Declaration on Environmental Guidelines produced in Melbourne, in English and translated into Chinese. They were able to make written comments on this document if they so desired; these were collected before the discussion session or before the end of the congress. All congress delegates had also received a copy of *Studies in Conservation* (vol. 59 no. 4), containing the three papers by Atkinson,

Staniforth, and Bickersteth on environmental conditions for safeguarding collections, printed especially for the Congress with abstracts in Chinese (Atkinson, 2014; Bickersteth, 2014; Staniforth, 2014).

Sarah Staniforth opened the discussion by saying that it was proposed to discuss the draft environmental guidelines. The three published papers would first be presented very briefly, to set the scene; Daniel would then present the draft guidelines on behalf of ICOM-CC. The four remaining panel members would then discuss very briefly the aspects of environmental control that were of particular concern to them. The discussion would then be thrown open to members of the audience.

Staniforth began the proceedings by outlining the salient points in her 2014 paper, 'Environmental conditions for safeguarding collections: Future trends' (Staniforth, 2014). Her first point was on research: whether more research into recommended relative humidity (RH) levels was needed. She questioned how much was really known about the relationship between the environment and the response of individual materials and pointed out the need to gather research papers and the so-called grey literature (academic, government or business literature, not produced by a commercial publisher so difficult to identify and access) into one, easily accessible place. The Getty Conservation Institute Project 'Managing

Correspondence to: Jo Kirby Atkinson International Institute for Conservation of Historic and Artistic Works, 3 Birdcage Walk, London SW1H 9JJ, UK. Email: [jkirbyatkinson@gmail.com](mailto:jkirbyatkinson@gmail.com)



Figure 1 Panel members for the Preventive Conservation and the Environment discussion session: from left, Sarah Staniforth (Chairman), Jo Kirby Atkinson, Julian Bickersteth, Vinod Daniel, Lynne DiStefano, Jirong Song, Jerry Podany, Richard Wesley, and Junchang Yang. ©IIC 2014 Hong Kong Congress.

Collection Environments Initiative' might be helpful in this respect (Getty Conservation Institute, 2014). She said that it was also important to identify the research gaps and to fill them.

Her second point was the need to identify the problem to be solved: perhaps to reduce energy consumption and the carbon footprint of museums, possibly using renewable energy; perhaps to save money. It might be to enable international loan exhibitions or to provide principles for determining environmental conditions for collections on permanent display and in storage. It could be all of these, or a combination.

Third, she raised the question of decision making in museums and the role of risk management. There was a need to move away from the precautionary principle that if it was possible to control the museum environment tightly, it should be done as this was thought to be the safest option, whereas this was not necessarily the best thing to do from the cost–benefit point of view. She then drew attention to the need for multidisciplinary working: all museum professionals should be involved in the decision-making process, not the conservators and conservation scientists alone.

Lastly she discussed the question of cultural leadership and the need for a more varied professional involvement in the leadership of conservation heritage organisations: conservation professionals should aspire to reach the level of directorships. IIC could

play a role here, encouraging conservation professionals and facilitating their advancement into leadership positions. IIC had also enabled the debate on environmental conditions with ICOM-CC with the formation of the joint working party, consisting of Jerry Podany and Julian Bickersteth from IIC and Vinod Daniel and Lisa Pilosi (Chair of the ICOM-CC Directory Board until September 2014) from ICOM-CC. It was important to note that IIC's role was as much to care for the future as for the past.

Jo Kirby Atkinson then summarised the main points in her paper, 'Environmental conditions for the safeguarding of collections: A background to the current debate on the control of relative humidity and temperature' (Atkinson, 2014). Linking back to Staniforth's point on the need to gather together the research literature, a feature of this paper was the amount and depth of the literature cited. The starting point of the discussion was Garry Thomson's book, *The Museum Environment* (Thomson, 1978, 1986). Here he looked at the conditions found widely in museums and elsewhere and suggested set points for RH and temperature, depending on the climate and type of object in the collection and also the building itself. He did not say that these set points (for most temperate climates, a RH of about 50–55% and a temperature of about 20°C) were good for every climate and every building, an important point. As

mentioned earlier, if a collection is long-established and well accustomed to the climate in which it has been kept and if the objects in the collection are stable, however inappropriate the conditions may appear to be, it may not be a good idea to change these conditions. These set points were, however, frequently requested for loans; they were also in specifications given to architects and engineers when buildings were being planned and they were not necessarily always appropriate. There was a generally accepted need to reassess these values, to reduce carbon emissions, and to consider the effects of climate change on cultural heritage objects. These topics were discussed at two of the IIC *Dialogues for a New Century* — at the IIC London Congress in 2008 and the 2010 American Institute for Conservation (AIC) Annual Meeting in Milwaukee — and also at several recent conferences, for example at the 2007 conference on *Museum Microclimates* in Copenhagen and the *Climate for Collections* conference in Munich in 2012.

As a background to the whole subject, there was a very large amount of historical and scientific literature and Atkinson drew attention to Staniforth's own book, *Historical Perspectives on Preventive Conservation*, published in 2013, which contained extracts from a great deal of the most significant and often inaccessible material (Staniforth, 2013). She then outlined the early history of the subject very briefly, mentioning the system for humidification constructed in the Alte Pinakothek, Munich, in the 1890s and that in the Museum of Fine Arts, Boston, in 1908. The beneficial effects of the wartime storage of the collection of the National Gallery, London, in stable conditions of RH and temperature in the Manod slate quarry, by comparison with the then unconditioned gallery rooms, was a particularly well-known example. By the 1960s, average values of about 50–60% RH were widely used, although these were not always achievable or satisfactory in cold climates. By the 1990s, other solutions, such as the conservation heating used by the National Trust in England, were being tried. There was a need for such solutions in historic buildings where it was not always possible to install the equipment or where the suggested conditions were not necessarily achievable. Recently, slightly less tightly controlled set points, such as those given in the *ASHRAE Handbook*, have been suggested (ASHRAE, 2011).

The scientific background to the subject consisted largely of detailed studies of the behaviour of the materials themselves, much of which was carried out in the 1990s. This research suggested that RH was a more significant factor than temperature, except in the case of chemical degradation. It also suggested that many materials might be able to tolerate greater fluctuations in RH than originally thought, part of

the evidence underlying the broader set point values proposed. However, model studies did not take account of the unpredictable behaviour of complex composite objects, possibly of great age and perhaps repaired with a variety of materials. In addition, the climatic conditions under which the object had been stored throughout its existence were not necessarily known. However, research on cultural heritage objects themselves was beginning to be carried out and was appearing in the literature.

Julian Bickersteth presented the interim results of the survey of environmental conditions in museums and galleries worldwide carried out by the IIC–ICOM–CC joint working party, referred to by Staniforth. The survey had been running for about the last 18 months and its methodology could be divided into three parts: first, to gather the information; second, to reassess the information to understand the present position; finally to dialogue more broadly among ourselves and with the profession (Bickersteth, 2014).

He noted that no country had a national position on environmental standards for museums; the closest approach to this was given by, for example, the VDR (Verband der Restauratoren) in Germany and the AIC in the USA. In the UK, where PAS 198, the precursor to a new British Standard, could be assumed to be the closest approach to a national position, the custodians of the national art collection, the National Gallery, London, appeared on the face of it not to be in full agreement. The survey therefore provided information on the position on environmental standards taken by the principal national museums. This could in general be taken as the national position as smaller museums both borrowed and looked for advice from the larger institutions. Both these factors thus dictated environmental conditions. He gave as an example the position in Finland and Denmark, where respondents noted that environmental standards in the museums reflected the prevalent national view. However, in general, the position was that smaller institutions often had difficulty in providing any form of environmental control at all.

The second point revealed by the survey was that the debate on environmental standards was driven by the social responsibility of reducing non-renewable energy consumption and creating a sustainable future. Conservators who felt it was unsafe to broaden environmental standards directly addressed alternative ways to reduce the carbon footprint of the museum. Conservators as a profession were very aware of their social responsibility in this respect.

Third, while set points for temperature and RH varied between climate zones, there was no disagreement on the optimum environment for the safe display and storage of collections with respect to minimising fluctuations. However, some respondents were

more pragmatic than others as far as what was actually being achieved was concerned. Seasonal adjustments were made widely, particularly in those countries where there was a marked climatic difference between winter and summer: Bickersteth cited Finland and Spain as examples.

Fourth, the survey showed that there was marked frustration with the process of international loans. The VDR response to the Bizot Group's interim guidelines was one aspect of this, the German conservators disliking being told by non-conservators what were safe conditions for collection display, especially when they suspected the presence of a hidden agenda with the aim of increasing the number of art loans. Unrealistic demands made by conservators and registrars of lending institutions, which often bore little relation to the environmental conditions under which the items were normally displayed or stored, were another source of frustration.

Fifth, the debate was essentially on whether the risks in broadening the environmental parameters for the display or storage of objects currently kept under tightly controlled conditions could be safely managed. It was not about the merits of passive environmental control, nor the undeniable fact that many collections had existed safely in museums and houses around the world for centuries with little or no climate control. Bickersteth referred to the principal Portuguese conservation publication on this issue, which stated that climatic conditions should not be changed where collections appear to be stable, citing examples of stable organic collections kept consistently at relative humidities of under 40% and over 80% (Bickersteth, 2014, p. 223). The debate was therefore limited to professional conservators caring for collections held in climate-controlled environments. He also pointed out that there was a perception that damage to artworks such as paintings was more irreversible than that to objects. A comment had been made by one of those responding to the survey that conservators in museums might perhaps be more tolerant of the idea of proofed fluctuations, accepting an unavoidable percentage of damage, than those working in art galleries.

Bickersteth continued by saying that the debate was as much about protecting one's own collection as about taking a broader view. Although conservators as a profession were socially responsible and cared deeply about environmental sustainability, they were conservative when faced with making decisions about the collections for which they were professionally responsible, erring on the side of caution if there was no definitive scientific proof showing that the risks were minimal. He gave as an example the very clear position held by the National Gallery, London, who were empowered by the UK Government not

only to look after the national art collection, but also to advise on the care of old master paintings in public collections. They provided their recommended environmental parameters from this perspective, while stating that they would take advantage of genuinely convincing, reliable evidence that environmental standards could be relaxed safely under a lower energy regime, both in their own practice and in recommendations to others (Bickersteth, 2014, p. 223).

This in turn affected the loan conditions placed on artworks, with some lending institutions actively placing tighter conditions on loans than those under which the objects were normally kept so as to try to minimise any risk during the loan.

The survey showed that, conversely, conservators who were not directly responsible for care of a collection tended to take a more relaxed view on the issue because they could speak in general, rather than a specific point of view. Bickersteth gave the response of the Canadian Conservation Institute (CCI) to the survey as an example: their approach to climate control was pragmatic, tailored to specific contexts, collections, and regions (Bickersteth, 2014, p. 223).

The most common reference point for establishing environmental parameters was the ASHRAE table of environmental control, with its identification of permissible fluctuations and associated collection risks and benefits to five classes, being cited by the USA, Canada, and Denmark (ASHRAE, 2011). Garry Thomson's *The Museum Environment* and the CCI publications were also regularly cited (Michalski, 2009a, 2009b; Grattan & Michalski, 2010).

Bickersteth's final point was that the science around the effects of broadened environmental parameters on objects was widely described as inconclusive and impossible to act upon as it was too based on experimental, rather than experiential, data. Questions were also raised about the cost benefit of energy savings resulting from the widening of environmental parameters compared with potential savings from other sources, such as the use of combined heat and power plants or the installation of LED lights.

Vinod Daniel, speaking on behalf of ICOM-CC, then introduced the draft guidelines after thanking Sarah Staniforth, and Shing-wai Chan (Leisure and Cultural Services Department, Hong Kong, Congress organiser and IIC Council member) for their invitation to the session. He commented that it was more than a coincidence when the document was being put together that the first round of the discussion took place in Melbourne, where it was cooler and drier, while the next location was Hong Kong, where it was warmer and more humid. He confirmed that ICOM-CC was very committed to the initiative and that it was a great collaboration. As he worked a great deal in the Asia-Pacific region, he had seen

interesting examples of how people coped in the climatic conditions. In one museum, in extremely hot, tropical conditions, he had seen a security guard, shivering with cold, standing by an open window to get some warmth from outside. In another case, a museum director was seriously concerned as the museum had had to spend 25% of its budget on energy costs. ICOM itself had members worldwide and requests on what to do about this particular issue would come from ICOM in Paris (the head office); the only answer that could be given was to refer to guidelines (for example, [ICOM, 1974](#)); there was no easy answer. ICOM-CC itself had about 3000 members and there had been a lot of discussion over the last two decades. He was very glad that progress was now being made, making the approach as broad as possible to start with, narrowing down as consensus was reached. At present the approach was still in the broader stage. He then tabled the recommendations as presented in Melbourne, with the hopes that these would be worked on further in the next few years (This document is given in full in this issue, pp. 12–17).

Sarah Staniforth then introduced Lynne DiStefano, who began by saying that, while she was present on the panel as someone involved with the architectural conservation programme at the University of Hong Kong, she was formerly chief curator in a Canadian museum and so could identify with the discussion of the needs to assess the needs of humidity and temperature control. Something that was said to the students entering the architectural conservation programme, both postgraduate and undergraduate, was ‘Do as little as possible, as much as necessary’; this was a good guiding principle for both buildings and artefacts.

How could architecture, particularly vernacular architecture, contribute towards the protection of collections? In Asia individual settlements had responded to the unique conditions of the place in which they are situated in ways that are inventive and sustainable. DiStefano pointed out that vernacular architecture was undergoing changes because of the introduction of new technologies; in fact this very introduction had undermined the sustainability of the building construction. She chose as an example a historic house museum, under her care when she was a museum curator in Canada. This building, dating from the nineteenth century, had a wood frame construction in good condition and contained its original furnishings. Air conditioning was then introduced with little thought of the consequences. The control of temperature and RH was good, but the concept of dew point had not been understood. As a result, the interior of the building might be warm while the outside environment was cool and vice versa. The consequence was that the wood frame rotted and the façades had to be replaced, one by one. Had the building been left

alone, to function as originally intended, the windows would have been opened when appropriate and air would have circulated when needed: a good lesson. She said there was a lot to learn from this example, particularly on air circulation: the capacity of air to protect collections efficiently and sustainably. Much could be learnt from vernacular architecture in Asia from this respect: openings — windows — high up in the building permitted the passage of air; verandas shielded the inside of the building. The materials of construction were also important: earth construction was very healthy; solid brick walls could be healthy; stone walls had certain problems although these, too, could be good.

Staniforth thanked Dr DiStefano particularly for introducing the subject of vernacular architecture and invited Dr Jirong Song, Deputy Director of Palace Museum Beijing, to take the microphone. Dr Song emphasised the importance of maintaining ventilation over the practice of merely controlling the RH and temperature artificially with an air-conditioning system in a closed environment. This concept was supported by an example they had come across during the conservation of the Qianlong Garden, which had suffered pest problems in corners that could be described as dead spaces, although they had strictly controlled the environment in this historic timber architecture. A similar principle had been applied during the preservation of some wooden furniture in the Palace Museum. Given the prolonged exposure of these organic artefacts to the ambient conditions, these items had become acclimatised with the surrounding environment and therefore it was not necessary to keep these acclimatised artefacts in an air-conditioned storage area. Lastly, Dr Song briefly addressed the point that precautionary measures should also be undertaken to minimise the effect of environmental pollutants on museum artefacts.

Jerry Podany said that he was not sure that he could add much to what had been said already. He did wonder, though, how long the debate would go on: it was a healthy debate, but it continued because conservation professionals needed to seek out the ideal situation, while working with the pragmatic. The weight of attention was shifting; 20 or 30 years ago there was an idealistic attitude towards what was done, but this was also prescriptive: the conservator would say that the world’s heritage should be saved for ever. Now, conservators ‘managed change’, a sign that the position had become rather more relativistic. They still wanted to pursue the ideal, but recognised that there were many answers to the question; the debate continued because there was also something rather unsatisfactory about the answer, ‘It depends’. Conservators would rather have prescriptive answers, but these did not exist; we should realise that

internationally there was a very large range of understanding and challenges. He pointed out that putting the emphasis on relativity reflected a significant change in the profession. Finally we should understand that the opportunities presented by this discussion were important for the evolution of the profession. Conservation scientists should give some percentage of their time to research solutions for the issues raised; conservators similarly should give time to understanding the historic conditions of collections in those many cases where there was no environmental control and it was unlikely that there would be any in the immediate future. It was necessary to understand what the situation in the many collections in the world can teach us about the history of environmental control and the opportunities available in this debate.

The next to speak was Richard Wesley, Director of the Hong Kong Maritime Museum. He described the museum as occupying 4400 m<sup>2</sup> in a converted pier and emphasised that it was both difficult and expensive to use a converted building. Hong Kong had a harsh and unforgiving environment. Like other parts of the island, the museum was near the sea, setting up the normal cycle of corrosion of sensitive materials, affecting not only items in the collection, but also computers. It also suffered the damaging impact of typhoons. Spring was an unstable, wet time of year, while summers were hot and humid. There were also civic issues: the museum had an extended glass roof, creating a build-up of heat inside the building. The building suffered from water penetration during heavy rain, particularly through poorly sealed sections of the building, such as pipe insertions, which had to be dealt with quickly. The air-conditioning system struggled with the high humidity, like all air-conditioning systems in Hong Kong. Once the RH outside the building was above 80%, that inside the building was probably 60%; with an external value higher than 80%, any air-conditioning system struggled. Air conditioning was therefore expensive. There was thus a conflict between air circulation and air conditioning; air was being cooled, but not necessarily dried. There was also a conflict between visitor comfort and conservation; people were used to a temperature of 20°C and complained if it increased to 23°C. The museum had air walls rather than air locks, which was not an ideal design strategy and was a system that architects should re-examine in the future. The current strategies of the museum included reflecting light and heat and ensuring exhibition cabinets are air-tight. The museum had very good quality show cases, which had recently been tested, and these were an important form of protection. The museum would continue to search for new strategies.

Staniforth thanked Wesley particularly for introducing the issues of show cases and visitor comfort,

then introduced the last speaker, Junchang Yang, Director of Shaanxi Provincial Institute for the Conservation of Cultural Heritage. He was more concerned about the environment of archaeological sites. In China, climatic conditions varied greatly in different regions and as a result, the environment of the original location of artefacts should be thoroughly studied in order to formulate an appropriate conservation plan, particularly for the care of composite objects.

The discussion was then opened to the floor.

The first speaker commented on DiStefano's statement that a conservator should do as little as possible, but as much as necessary, saying that this 'little' or 'much' might vary, depending on the culture. However, his main question was: if different countries had different notions on how to display an artwork, how should this be handled? If an institution wished to borrow an object from an institution in another country, but the object actually originated in the borrowing country, should the lender not respect the borrower's display conditions and environment? The speaker, who worked in the museum of the Chinese University of Hong Kong, gave the example of some Chinese paintings that the museum wished to borrow from an institution abroad. Chinese paintings are conventionally rolled, but the lending institution would not permit this, so that the borrowing museum had to construct some cases for them to be transported, increasing the costs. Daniel, speaking as a representative of ICOM-CC, said that he was not sure that most countries had a position on this. As far as loans were concerned, the struggle was often connected with insurance so the issue was not a straightforward question of conservation alone: insurance companies did not want to be liable. ICOM-CC would like to reach a consensus position, but for loans their hands were often tied.

The second question (from one of the speakers presenting a paper earlier that morning) was on the display of wooden structures. In addition to monitoring the temperature and RH of the environment, the speaker said the audience would like to know what kind of research should be carried out to investigate further the relationship between the internal moisture content of wooden structures and that of the surrounding environment. Dr Song answered the question by giving the example of replicating the Throne of Qianlong for the Palace Museum, Beijing. The contract to construct the replica was awarded to a company located in southern China, where the original environment of timber material might be more humid than the environmental conditions in the Palace Museum. This being the case, the museum was concerned about the long-term response of the timber replica on display, as the Palace Museum is

relatively drier in nature. With stringent control of the moisture content of the timber material, as well as the process of lacquer application, the timber replica had been on display since 2009 and was still in perfect condition, implying that conservators had to focus on how to ensure a stable environment with respect to the object itself instead of controlling the RH and temperature artificially. At the same time, it was equally important to bring the micro-environment inside the showcase into consideration, particularly for the display of sensitive artefacts.

After thanking Dr Song for her answer to the question, Staniforth asked if there were any comments from the audience on the ICOM-CC/IIC guidelines themselves; some had already been received on paper and through social media (see the paper by Bickersteth in this issue, pp. 12–17). Austin Nevin (Istituto di Fotonica e Nanotecnologie, Consiglio Nazionale delle Ricerche, Italy, and IIC Council member) commented that it would be useful to divide the guidelines into management of risk, study, and issues relating to loans. Some of the points applied to objects that need to be studied, but were never going to be moved or be loaned elsewhere. The discussion so far had also indicated that it would be useful to include guidelines on air flow and air exchange, both of which were important for preventing mould and other damage.

A member of the audience emphasised the importance of avoiding fluctuations in RH and temperature and also enquired how to establish guidelines and standards on museum lighting issues. Bickersteth commented that there was a broad agreement in the ICOM-CC/IIC guidelines on the importance of fluctuations. The Bizot, AICCM, and AIC Interim guidelines were given in the Appendix to the document (see pp. 12–17 in this issue) and all three included some comment on allowable fluctuations. Podany added that a stable environment with as little fluctuation as possible was most important. In addition, the opportunity should be taken to clarify the damaging effects of rapid as against slow fluctuations as there was some disagreement as to which were the more damaging. Lighting certainly needed to be addressed, although the debate on temperature and RH was taking a great deal of attention at present and it was probably best to concentrate efforts here first. A great deal of research had already been done on lighting and the effects of fading which had produced interesting results. As far as installing equipment with the aim of saving energy costs and reducing the carbon footprint was concerned, for most places lighting was more expensive from this point of view, something which needed attention.

Barbara Reeve (Australian War Memorial, Canberra, Australia, and IIC Council member)

suggested that progress might be made with the whole issue if the fear of being wrong that many conservators have was separated out. They could then look at the issue from the ‘Think globally, act locally’ perspective. She agreed with DiStefano and Song that a structure that had existed comfortably for hundreds of years should be left alone: interventions were not needed and might be damaging. Research should be concentrated on how to transition objects for loan: if, for example, an object was going from a hot, humid environment for a year’s display in a cold, dry environment what kind of acclimatisation did it need? Podany commented that there was a new challenge in that the planet’s environment was changing so that the structure that had existed comfortably before might no longer be able to do so.

Pamela Hatchfield (Museum of Fine Arts, Boston and President of the AIC) commended the work done during the Melbourne ICOM-CC congress to produce the draft guidelines. The AIC Environmental Working Group had produced some work recently on preventive conservation and collections care reported on during the AIC Annual Meeting in May 2014, which could be accessed through the AIC website, the blog or the environmental wiki (AIC [Environmental Guidelines](#), 2013). This working group would be very interested in working with IIC and ICOM-CC on this whole issue and producing a global statement. With the Sustainability Group of AIC and Northeastern University, Boston, she had been working on a life cycle assessment project on the loan process, an example of a lighting problem in the museum and a temporary shutdown of climate control to see the effects. This was to be published but was available online (AIC Sustainability Committee, 2014; [Nunberg et al.](#), 2014). Finally she drew attention to the Getty Conservation Institute project ‘Managing Collection Environments Initiative’, referred to earlier by Staniforth (Getty Conservation Institute, 2014). This would be collecting experiential data with the aim of understanding the implications of system shutdowns and other problems.

A member of the audience commented that it was possible to set a standard for environmental control; she had worked in China helping a museum prepare a loan exhibition to travel abroad and a museum in the UK, for example, would ask for a report, specifying the ICOM conditions. However, she had experienced the not-uncommon problem of there being no professional art handlers to move items, with the result that members of the security staff had to be trained. She asked if there was any intention to set standards for the temporary training of staff in handling objects. Podany replied that the temperature and humidity discussion could act as a model for the



discussion of all other issues. As far as broadening the discussion was concerned, there was a large group internationally that conservators should welcome and include in discussions and this included registrars and collection managers, who had only been present at a few of the discussions. They were often the ones making the recommendations and they were often the gateway to what was required for loans. There were those who believed that part of the whole discussion (on environmental conditions) was motivated by making loans easier and this was not really the case. One problem was that some conservators were setting standards for loans that were more restrictive than those in place in the object's home environment, believing that this way they appeared more professional.

Edward Kinfa Tse, of the Hong Kong Government Record Service (also one of the speakers in the earlier session), had two comments. The first was on the concept of natural frequency, referring to whether the frequency of change in fluctuation was fast or slow: this was more about the natural frequency of response of the material. If the frequency of change matched the natural frequency of the material, this would be detrimental. Natural frequencies were probably not known, however, so research was needed to obtain these data for all materials; these data could be merged for composite materials. Most of the items in storage were composite materials. His second point was on change of environment. He had been asked if an item in the collection, which had been stored at a certain temperature and RH, was sent away on loan and was kept at a different temperature and RH in the borrowing institution, for how long could it be sent out and returned to different conditions. This was solved using the rate of deterioration — the Preservation Index tool invented by the Image Permanence Institute, IPI ([Image Permanence Institute, 2015](#)). He would like to know more about this and whether the rate of deterioration could be measured for every material, then it would be possible to know for how long an item could be put into a certain environment.

A member of the audience, a conservator who worked as a registrar, said that it was true that registrars were already discussing issues of loans on a different level; there was a movement in Europe called Collections Mobility which had the aim of making loans easier ([Lending for Europe, 2014](#)). Registrars would like to work towards making loans easier, working together with conservators. On the other hand, Collections Mobility did encourage a different way of thinking as each profession tended to become narrow minded. It was important that the object was preserved — this was the conservator's focus — but why was this being done? It was preserved for the benefit of future generations, but it was

important to remember that it was also being preserved for the current generation and its heritage. The professions should work together and heritage should be shared.

To close, Staniforth invited members of the panel to make any last comments if they so desired. DiStefano reminded the audience that one panellist had referred to involving museum professionals across the board in making decisions; there are other museum communities: what are their perspectives?

Daniel said there was a broader paradigm. 99% of the museums in the world were probably not climate controlled. Museums only held about 10% of the world's heritage; everything else was in private hands. To consider training and taking India as an example, here probably 90% of the staff were not trained. He said that conservation as a profession needed to take risks and show leadership, otherwise there would be no progress.

Wesley commented that conservators needed to be involved at every stage in the building chain, from the architecture to the show cases. It was very hard to change the furniture or the fabric of the building later so it was necessary to plan and to talk to the suppliers and planners; this was very important.

Yang commented that it was almost impossible to provide an 'ideal' environment for preserving artefacts permanently. Hence, conservators should work closely with researchers to conduct more research experiments in order to understand the material nature and original manufacturing technology of their artefacts.

To close the discussion, the Chairman asked the audience to show their agreement with the ICOM-CC/IIC Draft Guidelines by a show of hands; only two members of the audience voted against the guidelines. Staniforth said that written and verbal comments received would be incorporated into the final version of the document (some of these comments are reviewed by Bickersteth: see pp. 12–17 in this issue).

## Acknowledgements

I am most grateful to Jonathan Tse, Paddy Szeto, and Casey Liu of the Leisure and Cultural Services Department of the Hong Kong government, who provided me with a summary translation of the contributions by Chinese speakers during the discussion.

## References

- AIC Environmental Guidelines. 2013. Museum Climate in a Changing World (modified 24 July 2014) [accessed 7 April 2015]. Available at: <[http://www.conservation-wiki.com/wiki/Environmental\\_Guidelines](http://www.conservation-wiki.com/wiki/Environmental_Guidelines)>
- AIC Sustainability Committee. 2014. Life Cycle Assessment Project (Modified 2 December 2014 and in Course of Correction) [accessed 30 April 2015]. Available at: <[http://www.conservation-wiki.com/wiki/Life\\_Cycle\\_Assessment\\_Project](http://www.conservation-wiki.com/wiki/Life_Cycle_Assessment_Project)> (see also <[http://www.conservationwiki.com/w/index.php?title=Sustainable\\_Practices](http://www.conservationwiki.com/w/index.php?title=Sustainable_Practices)>).

- ASHRAE. 2011. Museums, Galleries, Archives and Libraries. In: M.S. Owen, ed. *ASHRAE Handbook — HVAC Applications*. Atlanta: ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers), Chapter 23 [Chapter 21 in 2007 ed., pp. 21.1–21.23].
- Atkinson, J.K. 2014. Environmental Conditions for the Safeguarding of Collections: A Background to the Current Debate on the Control of Relative Humidity and Temperature. *Studies in Conservation*, 59: 205–12. doi:10.1179/2047058414Y.0000000141
- Bickersteth, J. 2014. Environmental Conditions for Safeguarding Collections: What Should Our Set Points Be? *Studies in Conservation*, 59: 218–24.
- Getty Conservation Institute. 2014. Managing Collection Environments (MCE) Initiative [accessed 7 April 2015]. Available at: <[http://www.getty.edu/conservation/our\\_projects/education/managing/](http://www.getty.edu/conservation/our_projects/education/managing/)>
- Grattan, D. & Michalski, S. 2010. Environmental Guidelines for Museums. Canadian Conservation Institute: Conservation Resources; General Care and Preventive Conservation (Modified 8 October 2013) [accessed 29 April 2015]. Available at: <<http://www.cci-icc.gc.ca/resources-ressources/carepreventivecons-soinsconspreventive/enviro-eng.aspx>>
- ICOM. 1974. ICOM Guidelines for Loans [accessed 29 April 2015]. Available at: <<http://icom.museum/professional-standards/standards-guidelines/>>. (First published in ICOM News, 27(3/4), 1974.)
- Image Permanence Institute. 2015. Preservation Metrics [accessed 30 April 2015]. Available at: <<https://www.imagepermanencemuseum.org/environmental/research/preservationmetrics>>
- Lending for Europe. 2014. Collections Mobility (updated 24 July 2014) [accessed 30 April 2015]. Available at: <<http://www.lending-for-europe.eu/>>
- Michalski, S. 2009a. Agent of Deterioration: Incorrect Temperature. Canadian Conservation Institute: Conservation Resources; Caring for Objects and Collections: Preventive Conservation and Agents of Deterioration (Modified 6 September 2013) [accessed 29 April 2015]. Available at: <<http://www.cci-icc.gc.ca/resources-ressources/agentsofdeterioration-agentsdedeterioration/chap09-eng.aspx>>
- Michalski, S. 2009b. Agent of Deterioration: Incorrect Relative Humidity. Canadian Conservation Institute: Conservation Resources; Caring for Objects and Collections: Preventive Conservation and Agents of Deterioration (Modified 6 September 2013) [accessed 29 April 2015]. Available at: <<https://www.cci-icc.gc.ca/resources-ressources/agentsofdeterioration-agentsdedeterioration/chap10eng.aspx>>
- Nunberg, S., Hatchfield, P., Eckelman, M., & the AIC Sustainability Committee. 2014. Life Cycle Assessments: Lighting, HVAC, Loans, and Treatments. Poster Presented at the 42rd Annual Meeting of the American Institute for Conservation of Historic and Artistic Works, *Conscientious Conservation — Sustainable Choices in Collection Care*, San Francisco, CA, 28–31 May 2014 [accessed 30 April 2015]. Available at: <[http://www.conservation-us.org/docs/defaultsource/annualmeeting/2014am\\_poster46\\_life\\_cycle\\_assessments.pdf?sfvrsn=2](http://www.conservation-us.org/docs/defaultsource/annualmeeting/2014am_poster46_life_cycle_assessments.pdf?sfvrsn=2)>
- Staniforth, S. ed. 2013. *Historical Perspectives on Preventive Conservation*. Los Angeles: Getty Conservation Institute.
- Staniforth, S. 2014. Environmental Conditions for the Safeguarding of Collections: Future Trends. *Studies in Conservation*, 59: 213–17. doi:10.1179/2047058414Y.0000000142
- Thomson, G. 1978. *The Museum Environment*. London: Butterworths.
- Thomson, G. 1986. *The Museum Environment*, 2nd ed. London: Butterworths.