AICCM Contexts for Conservation

2013 National Conference - Adelaide 23- 25 October

What should be our set point levels? – the complex question of environmental conditions in museums

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Abstract

Relaxed environmental parameters for museums have been on the table for consideration by the conservation community for at least the last five years, promoted by building managers and directors alike. Two years ago it looked as though international agreement on relaxation of environmental conditions in museums and galleries to reduce energy consumption, whilst not compromising the preservation of collections, was close. The AICCM Taskforce on Environmental Guidelines produced a draft document, but this never saw the light of day, and the reality is that agreement is still a long way off, due to strongly held and often polarised views within the conservation profession.

It is acknowledged that existing environmental parameters for collections are based on a blanket approach, and are unnecessarily tight for all but the most vulnerable of artworks (e.g. panel paintings), and major museums and galleries worldwide are recognising this and implementing relaxed parameters, such as The Tate, the Smithsonian and the V&A.

However a significant proportion of the conservation profession are not convinced that the risks in relaxing these parameters can be safely managed, a position best articulated by the National Gallery in London. Accordingly consensus amongst conservators internationally is not going to be achieved and therefore there will be no new blanket environmental standards.

This paper examines the current situation on this complex issue.

Introduction

We live in an age of great awareness of our changing environment and the impact that human activity has upon it. Sustainability is now a core value of most major collecting institutions around the world, and a key target for reduction of burgeoning utility costs is the amount of energy used by HVAC systems to maintain required environmental conditions.

Directors of institutions are turning to their building managers and their conservators seeking guidance on what can be safely achieved. A couple of years ago it looked as

though the international conservation community would be able to provide a collective view on new standards that would provide a safe environment and also require less tight standards, and therefore require less energy to maintain. Official standards, such as the British Standard 5454 for Archive Documents were under review and a new specification PAS 198 was released in draft form for public comment.

However as we meet together, the profession is not as one as to how to respond to the challenge. There are hard line views that conservators, having fought to have the current standards accepted, should not now allow a relaxing of them, perhaps best summed up by the 'stable is safe' approach, there are liberal views that all but the most fragile objects can cope with relaxed conditions and that we must play our part to save the planet, and there are those in the middle who see both sides of the argument.

Differing views

Let us start by taking a look at these views.

Firstly the no change position, best articulated by the National Gallery in London, a key reference point, given that the standard has to date been set by Garry Thomson, Scientific Advisor to the Gallery.

"The Gallery's current specification is a modified form of a set of environmental recommendations for so-called 'Class I Museum Conditions' published by Garry Thomson, who was Scientific Adviser to the Trustees of the National Gallery from 1960 to 1985. They are contained in the second edition of 'The Museum Environment' (Butterworths, London, 1986). Refinements have been made by David Saunders in 'The Environment and Lighting in the Sainsbury Wing of the National Gallery' (ICOM Committee for Conservation, Vol. II, 1993, pp. 630ff) and other Gallery experts. In summary the current specification is:

Light level: 150 ± 50 lux (UV radiation content now specified as less than 10 μW/lumen; formerly 75 μW/lumen), annual light exposure limit: 650 kilolux hours; Relative humidity: 55 ± 5 %; Temperature 21 ±1°C (winter); 23 ± 1°C (summer).

It is widely accepted that it is essential to expend energy for environmental control in certain vital contexts: hospital operating theatres for example or institutions such as Kew's Millennium Seed Bank at Wakehurst Place. For unique and fragile works of art such as Old Master paintings, their future preservation is only guaranteed by providing closely-controlled environmental conditions.

In order to display a collection to best advantage for the greatest benefit to the public, it is necessary to provide Gallery conditions that are safe for the more fragile works in the collection. This enables works of differing sensitivities to be hung together. This position is supported by paintings conservators in Germany, Austria and Switzerland with their position best spelt out by the Munich based Doerner Institute in May this year as published on Cons Dist List:
"...the Doerner Institute refuses to follow the recently enacted 'Interim Guidelines' of the Bizot Group. This group of important museums world-wide has taken on the obligation of organizing major exhibitions. Under current financial pressure, the group has now turned its attention to the 'green museum' and the topic of 'sustainability' ".

To save resources and to lower the carbon footprint, several members of the Bizot group proposed the implementation of relaxed 'Interim Guidelines' for climate conditions in museums as well as for loans.

As argued by the Doerner Institute, a stable room climate with tight ranges for relative humidity and temperature has been largely responsible in the past for the excellent condition of sensitive art objects, including paintings of all types, in our collections. To depart from these values, would increase the risk for our collections and do little to help the environment.

Moreover, the relaxed 'Interim Guidelines' increase the risk for all lenders and will raise insurance premiums, perhaps very significantly. The institute is convinced that the goals of a "green museum" and "sustainability" can be achieved by means other than by abandoning globally accepted museum standards that are also applied generally to art in transit around the world. As stated by the institute, the relaxed 'Interim Guidelines' of the Bizot Group are without doubt mainly geared to the aims of the organizers of large loan exhibitions."

At the other end of the debate, the proponents of a more liberal approach include Jim Reilly of the Image Permanence Institute in the US who recently stated **"**it's time to put a stake in the heart of the zombie of 20/50" for all collections, all the time**.** The standard is not ideal for all circumstances, doesn't meet the needs of many collection types, and is difficult and costly to maintain mechanically."

And Jonathan Ashley-Smith, former Head of Conservation at the V&A in London, as long ago as 1994 stated " as far as environmental damage is concerned my thesis is that if you move a sound object from an environment somewhere in that middle range of 50rh plus or minus 15 to another environment that is also in that mid range, the risk of detectable additional deterioration is small. **"**

In between the two extremes lies a variety of positions. The AIC issued guidelines in 2010 that were endorsed by the American Association of Museums Directors in May 2013 as follows:

"For the majority of cultural materials, a set point in the range of 45-55% relative humidity with an allowable drift of +/- 5% yielding a total annual range of 40% minimum to 60% maximum and a temperature range of 15-25C is acceptable. Fluctuations must be minimised"

Meanwhile the new UK standard PAS 198 **'**Specifications for Managing Environmental Conditions for Cultural Collections' is not as prescriptive allowing 35-65% RH and 5-30C temperature as determined by a process best described as a risk-managed, holistic approach to environmental management . No "ideal" standard is presented—the goal is to help users make their own judgments based on local climates, an understanding of collection material vulnerabilities to agents of deterioration, the capabilities of the mechanical system and the building envelope, and the move toward energy reduction.

Finally there are also the non conservators weighing into the debate, such as Maxwell Anderson, currently Director of the Dallas Museum of Art:

"Throughout their history, art museums have spawned and fostered a subculture indifferent to developments in the world at large. Our ocean liner-like art galleries are slow to change course even in the face of evidence demanding it. A critical illustration of this habit is the rigid formula arrived at long ago that prescribes the set points of relative humidity and temperature in our museums.

It remains an unshakable conviction for most conservators and administrators that unless a museum can guarantee lenders that its interior climate is 20 degrees celsius and 50 per cent relative humidity (with an allowance for minor fluctuations), it has no business asking for loans, and cannot be trusted with its own collection. That conviction informs many facets of a museum's operations beyond the cost, including how art is borrowed, lent, shipped, installed and stored."

History

As can be seen consensus is not going to be easily reached. It is useful however to identify the big questions, that in the process of answering, the conservation profession may at least achieve clarity if not agreement.

Let us first remind ourselves of the background to the current standards. The defining event is that surrounding the emergency response to the aerial bombardment of the UK in the Second World War. At the advent of the war, works from several galleries and museums were stored in environmentally stable slate quarry caves in Wales, with no discernable changes in their condition. So in the aftermath of the War, the approximate temperature/humidity ratios of the caves became the standard for climate control in museums.

Garry Thomson's The Museum Environment (1978 and 1986) is considered to be the source of the "20/50" standard, inadvertently creating a problem that easy to remember numbers win out over a formulation that takes a little more work to understand. As AIC have said, "20/50 was not originally intended to be a standard but became so since having a rule is easy". But a close reading of Thomson's recommendations includes a number of qualifications, including that the standard is based specifically on the needs of painting collections, London's climate, and the environment that the building and its mechanical system were capable of maintaining in the summer. He called for continued investigation of material behaviour to more realistically set environmental limits. He also acknowledged taking the limitations of mechanical systems and the need for human comfort into consideration, and he recommended seasonal variation.

Thomson even noted that "the standard specification of +/- 4 or 5% in RH control is based more on what we can reasonably expect the equipment to do than on any deep knowledge of the effect of small variations on the exhibit." (Second edition, 1986, p.118). The "20/50" standard therefore has been taken up as the unchangeable point of reference, when even Thomson himself surrounded it with all manner of qualifications, and was very clear that one size does not fit all. He would have agreed for instance that it makes sense for an institution in somewhere like Auckland, existing in a damp maritime environment in a country where mould growth is a major issue, to assess their

environmental condition settings in a different way than an institution in say mainland North America surrounded by large dry land masses.

A further matter that is commonly confused is whether this debate is about loaned items or about permanent collections.

The short answer is that it is about both, but it helps to clarify the situation, if the focus of particular positions are understood. The National Gallery, London position is very much about their permanent collections and the conditions they chose for them. They have identified that their most vulnerable paintings (Flemish panel paintings) require these conditions to ensure their stability. That is their decision and they are not trying to foist the conditions on anyone else except where items are loaned, beyond saying that they regard this level of control as best practice. It should also be said that they are actively seeking energy reduction measures in other areas of the Gallery's operations.

Conversely the German position is all about loans and in particular the actions of the Bizot Group, a loose group of the world's leading museum directors. The Bizot Group is on the face of it seeking to reduce carbon dioxide emissions by museums, and has identified opportunities to do so by relaxing environmental standards and also reducing the number of couriers that travel with loan items. Whilst the Bizot Group have identified the need for further scientific investigations as a requirement for greater understanding of material properties, the German position is that given our current state of knowledge, giving up the present environmental standards would entail an increased risk to cultural heritage, and should not be entered into prematurely. The Germans also suspect that the Bizot Group's motives are in fact about saving money to increase the number of items that are loaned, thus putting more artworks at risk.

In summary therefore the debate is being driven by both loan requirements and the needs of permanent collections. The two issues do need dividing. Loans are a world wide issue, with incoming loaning museums have to comply with the environmental conditions the outgoing body provides for the loan to proceed. There is much debate as to whether these loan conditions actually reflect the conditions being achieved by the loaning body. Permanent collections are the responsibility of the owning institution, which can make the call as to what conditions are provided. This is where PAS 198 comes in with much useful advice on how to undertake a risk based assessment on what the appropriate conditions should be.

Another key issue that needs to be brought to the debate is the evidence that is being relied upon, whichever the position being taken. Despite much important work being undertaken over the last 20 years by highly respected conservation scientists including Mecklenburg, Michalski, Koslowski, Padfield and Pretzel we still know remarkably little about how materials respond to different environments and to which cause damage can be attributed. A good example of this is Michalski's position on proofed RH and Temperature, namely that the largest RH or temp fluctuations to which an object has been exposed in the past determines that the risk of further mechanical damage, beyond that already accumulated, from fluctuations smaller than the proofed value is extremely low. A portion of the conservation community plainly disagree with this, but there is too little evidence at present to determine the answer definitely one way or the other.

Conclusion

In summary, to move forward it is my view that the profession needs to address the following points:

1) Let us be honest about the reality of current environmental conditions in museums and galleries around the world. As was stated in the Climate for Collections Munich conference in November 2012, no museum in the world is achieving better than ASHRAE Class B on a year in year out basis. Lack of honesty on this is impending open and frank debate, and resulting in false information being provided both by lending and borrowing organisations.

2) Let us have a wider debate on the issue with museum professionals and building managers, in a non judgemental way that sets aside the years of distrust that the point above has engendered, both amongst conservators, who do not trust what their peers state, and amongst collection managers, curators and directors that know conservators are not being honest with each other.

3) Let us be clear that there is still an enormous of science to be undertaken before we can really make decisions on the effect of environmental change on objects. In doing so we must respect the positions being taken by some of our colleagues who are strongly of the view that without sufficient evidence to the contrary we should stick with the status quo. However in doing so we need to be clear that the best practice conditions are being set for the most vulnerable of material types in national collections, and these should not be used to define requirements for all global cultural collections, as the current debate would suggest they are.

For the moment the reality is that there is no such thing as a “one size fits all” or “straight line” environmental standard that is easily attainable, appropriate for preservation of mixed collections, or environmentally sustainable. Collection care staff must develop a risk-managed approach based on the most significant vulnerabilities of collection materials, the local climate, the capabilities of the mechanical system, and the limitations imposed by the building’s construction. As PAS 198 spells out, we must move " to a more mutual understanding of the real conservation needs of different categories of object, which have widely different requirements and may have been exposed to very different environmental conditions in the past.”

Author Biography

Julian Bickersteth is the Managing Director of International Conservation Services and Vice President of the International Institute for Conservation. He chairs the AICCM taskforce on Environmental Guidelines, and is coordinating a joint IIC and ICOM CC working group to examine the international position on potential relaxation of environmental parameters in museums.

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