

Going Green in Museums: a Conservator's View

Paul Himmelstein and Barbara Appelbaum

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Introduction

How does “going green” apply to the operation of museums? The question is complicated because museum buildings encompass so many functions. Museums have offices, restrooms, auditoriums, and food services. They send out mailings and publish catalogues. Museum buildings need to be cleaned and maintained. Museums have parking lots, and grounds with plantings. Going green in these areas can follow standard procedures developed elsewhere because collections are not affected.

However, collections spaces – both exhibition and storage – present a different set of issues, particularly for lighting and control of temperature and relative humidity. Even in the absence of sustainability concerns, specifying environments for collections is complicated, and adding one more consideration makes it more so. In certain contexts, however, what conservators have been recommending for years is, in fact, congruent with current ideas about sustainability. In other contexts, conservators’ recommendations are energy-intensive, and therefore, not environmentally friendly.

Indoor Air Quality and Environmental Controls

Indoor air quality is one issue on which conservators and green advocates largely agree. The Green movement, starting with the California laws, has even made specifying non-off-gassing materials easier. The no-nos for building materials, coatings, and cleaning materials include oak flooring, ammonia-containing cleaners, most varieties of plywood, polyurethane, and oil-based paints. The use of filtration, particularly of gaseous pollutants, however, puts stress on air circulation systems and therefore increases energy requirements.

Relative humidity control puts conservators and green advocates on somewhat opposite sides, since strict environmental control uses a great deal of energy. However, the current state of the art is not good, and relative humidity is the issue most likely to present continuing problems after new museum buildings are commissioned, so it may be time to rethink much of what has been done in the past.

The track record for various mechanical systems to control relative humidity in museums needs serious reappraisal. In addition, specifications are commonly set without appropriate consideration of all the relevant issues. Specifying parameters for relative humidity that actually improve long-term preservation of collections requires detailed knowledge of the collections

involved, their current condition, histories, susceptibilities, and storage and display methods, as well as information about the building structure and the staff resources of the institution.

One thing, however, works in favor of the possibility of energy savings on relative humidity control: the still-quoted mantra of 50% RH/70°F as the “perfect” museum environment is mistaken. 70°F is, of course, a comfort zone for humans and has nothing to do with objects, most of which would do better at much lower temperatures. The effects of relative humidity vary with the type of object, but for a vast majority of objects there is substantial leeway in the actual levels that preserve them unharmed.

Overall green museum design that takes into account the added burdens of controlled environments for collections would likely include totally green spaces and less green ones. Zones would have to be well isolated, presumably leaving interior spaces for collections. Within that sensible-sounding plan, however, lie lots of details that require substantive discussions among conservators and architects. If, for example, the temperature in collection storerooms is allowed to fall below human comfort levels in the winter, condensation can become a problem for collections moved into or through other spaces. Low-level heating controlled with humidistats has been recommended to prevent certain problems that can result from high RH, but then how much energy is actually saved?

Lighting

Green exhibition lighting presents its own problems. The low color rendering index ability of almost all fluorescent lamps makes them unsuitable for most exhibition use, and although LEDs are being developed for museum exhibition, their current cost makes them prohibitive. An increased use of natural light requires innovative controls that not only limit the amount of light in galleries, but also allow complete cut-off when collections are not being viewed. Exposure of collections to daylight during off-hours is unnecessary, and is all too often overlooked as a source of deterioration. Given the usual hours that museums are open, off-hours exposure generally represents at least fifty percent of total light exposure.¹

Conclusions

Determining the specific environmental needs of the collection, rather than assuming generic requirements, can make an important difference in the design of storage and exhibition spaces. To this end, having a consultant conservator as part of the team from the beginning of a project, rather than bringing one in just to provide the usual recommendations about environmental parameters, is important if the museum wants to make the project as “green” as possible. The conservator can also work with in-house curatorial and conservation staff to work out programming needs and possible changes that can reduce the need for hard-to-maintain environments. Working as an intermediary between staff and mechanical engineer, the conservator can often help to change long-standing work habits that adversely affect the load requirements of a building. When staff understand the impact of their stated “requirements” on the overall environmental cost of a project, they can often find innovative ways to adapt. Storing

¹ The 50% figure comes from a schedule in which a museum is open from 10 am to 6 pm, seven days a week. Daylight averages twelve hours. Although light is relatively weak at the beginning and end of the day, lower angles may mean more sunlight shining directly on wall-mounted objects and, of course, many museums are open much less than 56 hours per week.

similar objects from different departments together, requiring one day's notice before an object in storage may be viewed in another environment, using digital images as a preliminary "browsing" tool before a request is made to see objects in storage, and designing storage facilities specifically to serve the needs of collections, rather than human comfort, are all possible ways to reduce the environmental impact of a project. We have found that a conservator who is experienced in these aspects of building planning and construction is an essential team member for a successful project.

If sustainability is indeed becoming a serious factor in promoting new museum design, then the implications for the preservation and presentation of collections are serious. With enough thought, the results can serve both the collections and the outside environment.