

Display Case Lighting

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THE smallest, most precious and delicate objects in a museum's collection are usually to be found displayed in cases. The presence of the case inevitably introduces a barrier between the object and

the viewer, depriving them of any experience of the object other than sight. It follows therefore that display case lighting must be of the highest quality to ensure that the viewer can obtain the most from the object displayed.

UNTIL relatively recently the almost universal solution to case lighting has been the top box full of fluorescent tubes with a diffuser. Examples of this solution can still be seen in every national museum and many smaller local museums. Lighting of this nature is rarely appropriate to the objects being displayed and is always unexciting, it is akin to the blandness of daylight on an overcast winter's day. We have all experienced the uplift from sunlight as it emerges from behind a cloud, the directional nature of this light reveals the texture and form of our surroundings, the slight warmth in the colour of the light enriches the colours around us. As a general principle this is the atmosphere we should strive for in lighting exhibits.

IT is sometimes best to think of each case being a miniature theatre stage and look to using theatrical lighting techniques, scaled down with appropriate technology for each application. As in the real theatre some cases will present an enclosed stage viewed from one side only, some will be a thrust stage seen from three sides and others will be viewed in the round. In this analogy the objects on display are the actors whose characters need to be defined by the lighting, the supporting display and graphics become the stage set which requires a careful hand to illuminate without upstaging the main characters.



EXHIBITION case are often used to provide environments for dioramas, the lighting in such cases needs to be true and harmonious to the environment being portrayed, these could range from a coal face in a mine to a battle scene or a storm at sea, sensitive lighting design can do much to reinforce the atmosphere of these scenes. Although the fluorescent top box is not a good solution in general, where a sky is needed in a diorama then it can be used to great effect.

Low voltage lighting can be used from a top box position in many situations providing that great care is taken in the selection and specification of lamps, the range of low voltage lamps is both vast and bewildering for the uninitiated.

IT is important to remember that most Tungsten Halogen lamps emit unacceptably high levels of Ultra Violet light. Some makes of dichroic reflector lamp, which have Borosilicate front glass, emit less than the recommended maximum 0.75 microwatts per lumen of U.V. (recommended by Gary Thompson in his book [The Museum Environment](#)). Other manufacturers use a special coating on their lamps to reduce UV output to this level.

The amount of visible light within a case also needs to be controlled to maintain conservation levels. Visible light levels are best controlled by careful and knowledgeable specification of lamps, but filters, louvres and dimming also have their uses. However, the often excessive use of dimmers needs to be restricted to prevent the all too familiar gloom of cases lit by dull yellow light which renders the colours of the exhibits very badly and leaves text unreadable; if the lighting needs to be dimmed that low to maintain conservation levels then there is something very wrong.

NORMALLY if you illuminate an object from above and set a 50 lux level at the top of the case, by the base of the object the light level will be next to nothing. However, expert focussing using the periphery of the beam and bouncing light off the case walls and louvres can prevent this problem, this expertise can be particularly useful in costume cases where the costume fills the height of the case. This approach obviously has maintenance implications, it is essential that lamps are replaced like for like and that in replacing lamps the focus of the lamp is maintained.

ANOTHER important element of case lighting is the position of the light source, again the conventional solution is top lighting however there are many instances where objects are undercut and it is necessary to get light around and underneath them. The necessity to maintain the microclimate within the case to conserve the objects precludes the use of lamps within the display space, as does the necessity of opening the case to maintain the lamps. Nevertheless, in some instances we do need to get light sources within the body of the case, and so a method of light guiding is necessary to get a lit source in the case without the lamp itself. At its crudest this can be done with mirrors to create a periscope arrangement however, aesthetically this is unlikely to be acceptable; higher technology solutions include the use of Fibre Optics.

ALTHOUGH Fibre Optics are a widely prescribed panacea they are definitely not a universal solution to all case lighting problems. There is presently a deluge of suppliers jumping aboard the Fibre Optic bandwagon, all offering different systems, some using Tungsten Halogen light sources, others offering a bewildering array of higher powered discharge lamps. There are many different

fibres on the market, some claiming to be high transmission types are in fact rejects from the computer and communications industry which have the unfortunate, for us, property of being very good at transmitting Infra Red (i.e. heat) as that is what they were originally designed to do.

Much current discharge Fibre Optic technology claims to provide light output equivalent to a 35W dichroic spotlight, future technology hopes to reach a 75W equivalent. With the multitude of Fibre Optic tails normally stuffed into cases these sort of light levels are far too high for conservation level illumination; too many contractors and suppliers still believe the myth that de facto Fibre Optic case lighting solves all conservation problems of heat, UV and light level, it doesn't!

For some objects and complex cases the multiplicity of small light sources which can be provided by Fibre Optics is ideal, allowing highlighting of details. For lighting large diffuse areas such as manuscripts and textiles from close range they are a very useful solution, however nothing is more distracting when trying to view a highly polished surface such as a silver bowl than the reflections of myriad points of light which do nothing to outline the form of the object.

THERE are other light guiding media such as light pipe, SOLF (using a plastic material developed by 3M) and side emission fibre which also allow remote mounting of light sources but provide linear sources of illumination within the case. These can be useful to provide ballet style cross lighting for costume etc. or just as an additional general fill light within a case to balance strong directional light from other sources.



IN diorama cases the full panoply of theatre lighting techniques can be employed, variations in light source, colour, focus, projecting patterns of light and even creating moving effects. Many of these effects can be created in remarkably small spaces if you have the correct lighting equipment. However no one manufacturer has a range of equipment to cover all these eventualities and the all too common reliance upon supplier specified lighting can therefore result in a lot of missed opportunities and the use of inappropriate technology, very few display cases are large enough to use real theatre lighting equipment with their attendant heat problems.

FOR temporary exhibition cases where, over time, a wide variety of objects will be displayed the essence should be to provide a highly flexible lighting system to optimise the displays for each exhibition rather than the more usual general illumination system which will never flatter any exhibit. Low voltage dichroic lighting is often a good choice for temporary exhibition cases as a simple lamp change can transform a narrow spotlight used to highlight a small piece of jewelery into a floodlight to illuminate a large painted backdrop.

THE key things to remember are: firstly, consider what objects will be displayed and how they will be arranged; secondly, who will maintain the display and how frequently. Ideally these should be settled before the design of case lighting is begun. But, as it is usually necessary to design some aspects of the case around the lighting it is sensible to look at this aspect at the beginning of the design process and work closely with the designer of the lighting system, what seems like a minor layout alteration may have a major knock-on effect on the successful creative lighting which your exhibits deserve.

Kevan Shaw & Malcolm Innes, May 1994.

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Footnotes

clicking on the underlined title of the footnote will return you to your place in the text. [...The Museum Environment...](#) : Gary Thompson, 1978, The Museum Environment, London, Butterworth-Heinemann. Excellent text book written by a former Scientific Adviser to The National Gallery, London