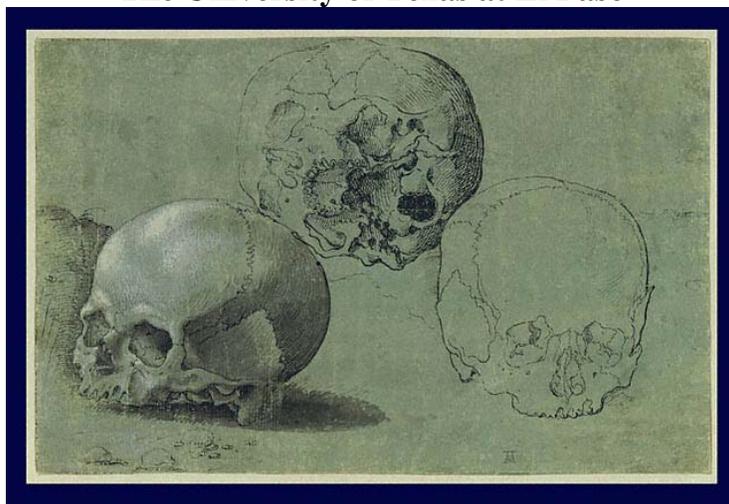


In a New Light:
**Design of Illuminants to reduce Photochemical
Degradation of Works of Art**

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The great works of art are experiencing the inexorable ravages of time and entropy. Many factors are contributing to the gradual diminution of the essence of their attraction. Among these are air pollution, oxidation, variations in humidity, unsatisfactory restorations, and poor handling. We are also inadvertently destroying them by the very act of placing on exhibit by exposing to slow photochemical degradation. For sensitive objects, the degradation is not so slow.

This project represents an effort to gain control of the illumination ingredient to reduce to a minimum the effects of light. Damage comes both from considering the wavelength of illumination and the luminous flux necessary to create a human visual response. Typical illuminants such as fluorescent, incandescent, and sunlight vary considerably in radiant power per unit of luminous intensity. Incandescent light has relatively less luminosity than sunlight, though sunlight has significantly more high energy photons. Two questions arise: Is there an optimal spectral distribution to maximize luminosity and can specific damaging wavelength regions be minimized? Manifestly tied to this is the need to retain adequate color rendering, and finally can illuminants actually be designed and manufactured to achieve the theoretical wish?

Pictured above is Barthel Beham's "Study of Three Skulls" (89.GA.24; German, about 1530, original size 5 7/8 x 9 1/8 in.) from the J. Paul Getty Museum collection of Old Master Drawings. Old Master Drawings are among the most susceptible to photochemical degradation. Our initial efforts have focused specifically on lighting to protect these objects, but the methods are broadly applicable. In addition, control of the light to protect then also provides control to render, and we can discuss the concept of recreating lighting under which the artist originally created the object and which it perhaps may be best appreciated to the artist's intent.