It is important to distinguish between task performance and visual performance. Task performance is the performance of the whole task. Visual performance is the performance of the visual component of the task. Task performance is what is needed to measure productivity and estimate cost benefit ratios for lighting. Visual performance is all that lighting conditions can influence directly. Every task has a different relationship between visual performance and task performance depending on the structure of the task. This makes it impossible to generalise from measurements of visual performance to the performance of all tasks.

The impact of lighting conditions on visual performance is determined by the size, luminance contrast and colour difference of the task and the amount, spectrum and distribution of the lighting. An analytical approach using a standard task measured over a wide range of conditions has served to demonstrate, qualitatively, the effects of increasing illuminance on visual performance (Figure 2.14). They are that increasing illuminance follows a law of diminishing returns, i.e. that equal increments in illuminance lead to smaller and smaller changes in visual performance until saturation occurs; that the point where saturation occurs is different for different sizes and contrasts of critical detail; that larger improvements in visual performance can be achieved by changing the task than by increasing the illuminance, at least over any illuminance range of practical interest; and, that it is not possible to make a visually difficult task reach the same level of performance as a visually easy task simply by increasing the illuminance over any reasonable range.

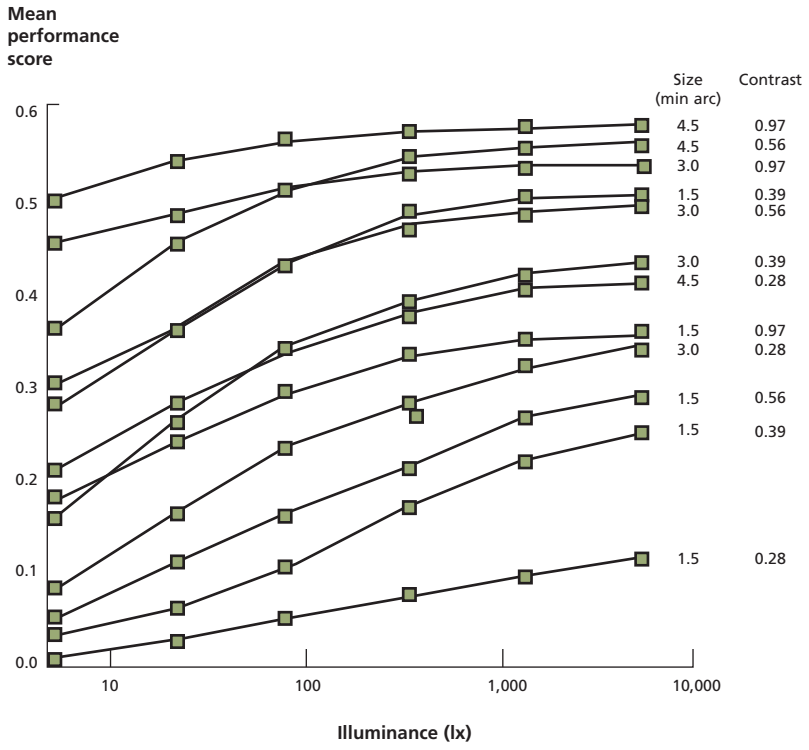

Figure 2.14 Mean performance scores for Landolt ring charts of different critical size and contrast, plotted against illuminance (after Weston, 1945)