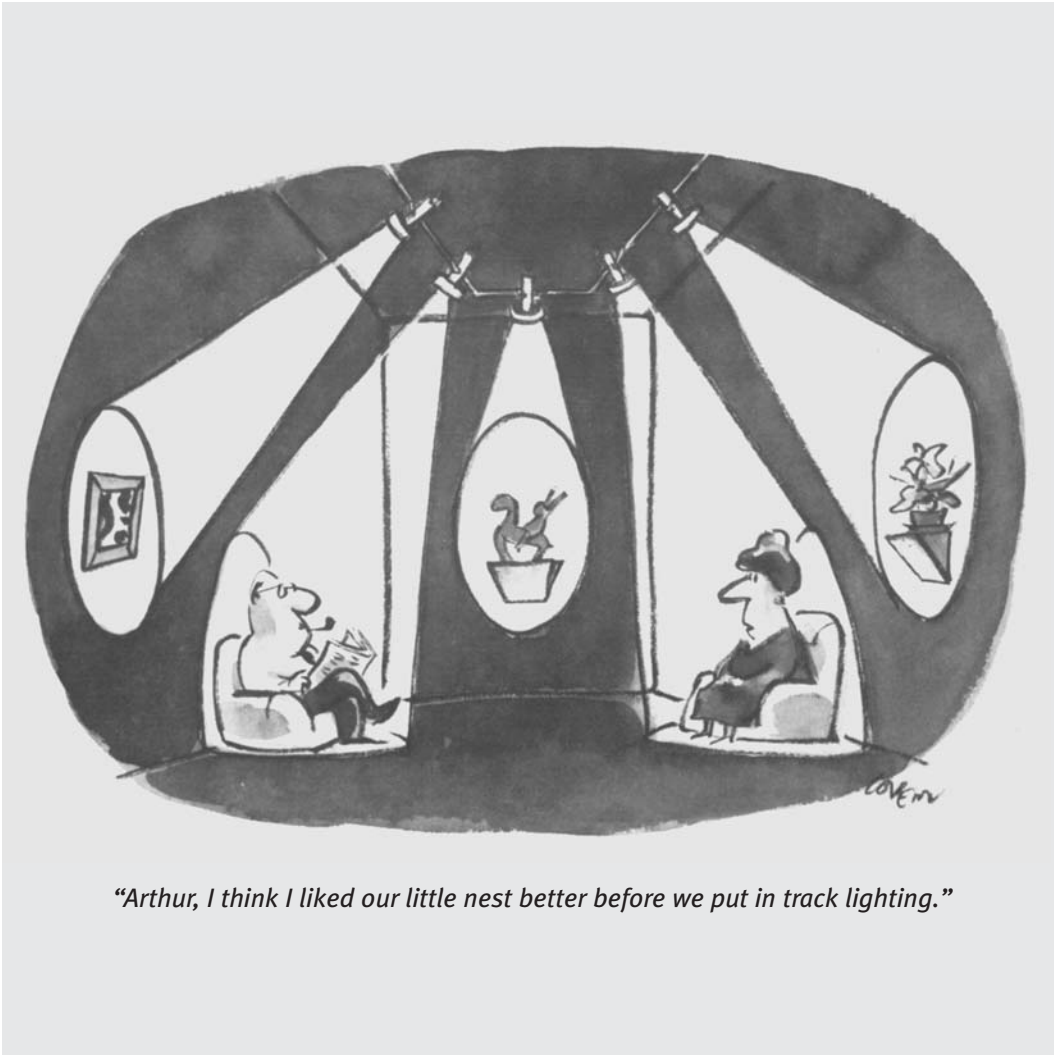


# Section One

## UNDERSTANDING LIGHT

*Reprinted by permission of  
The New Yorker Magazine.*



*“Arthur, I think I liked our little nest better before we put in track lighting.”*



# Chapter One

## THE FUNCTIONS OF ILLUMINATION

The new technologies and developments in lighting over the last decade have created opportunities for approaches to lighting only dreamed of in the past. Lighting technology has greatly evolved from the times of candles and gaslights, yet many of your clients have not updated their thinking much beyond that. We can now achieve lighting effects that match our virtual reality, techno-magic world. Plus, we can do it within a reasonable budget, without dramatically changing the way we live. At the same time we can increase the comfort and convenience level in our living spaces.

Lighting can be a tremendous force in design; it's the one element that makes all the rest work together. Yet it has for so long been the second-class citizen of the design world, and the results have left many homes drab, uncomfortable and dark. Too often the blame goes elsewhere, when improper lighting is the culprit causing the discomfort. Let's take a leap from nineteenth-century lighting to the next plateau by welcoming new lighting possibilities and techniques, and sending design into a new era of dramatic comfort.

Light has four specific duties: To provide *decorative*, *accent*, *task*, and *ambient* illumination. No single light source can perform all the functions of lighting required for a specific space. Understanding these differences will help you create cohesive designs that integrate illumination into your overall design.

### **Decorative Light**

Luminaries such as chandeliers, candlestick-type wall sconces, and table lamps, work best when they are used to create the sparkle for a room. They alone cannot adequately provide usable illumination for other functions without overpowering the rest of the design aspects of the space.

For example, a dining room illuminated only by the chandelier over the table creates a *glare-bomb* situation. As you crank up the dimmer to provide enough illumination to

Light performs these basic functions: decorative, accent, task and ambient — the well-integrated layering of the four within each space will create a unified design. “The mark of professionalism in lighting is the absence of glare.”  
- General Electric.

The Museum Effect — When art becomes visually more important than people within the space. Even museums now add additional illumination beyond accent light to help reduce eye fatigue by cutting contrast in the overall environment.

see, the intensity of the light causes every other object to fall into secondary importance. The wall color, the art, the carpeting, and especially the people, are eclipsed by the one supernova of uncomfortably bright light. They won't see all the other elements, no matter how beautiful or expertly designed.

By nature, any bright light source in a room or space immediately draws people's attention. In the best designs, the source of ambient light will not be visible.

Similarly, linen shades on table lamps draw too much attention to themselves. Consider using a shade with an opaque liner and perforated metal diffuser fitted on top to direct the illumination downward over the base, the tabletop and across your lap if you're reading.

### **Accent Light**

Accent light is directed illumination that highlights objects within an environment.

Luminaries such as track and recessed adjustable cans are used to bring attention to art, sculpture, tabletops, and plants. Just like any of the four functions, accent light should not be the only source of illumination in a room. If you use only accent light, you end up with the "museum effect," where the art visually takes over the room, while guests fall into darkness. Even museums now add additional illumination beyond accent light to help reduce eye fatigue by cutting contrast in the overall environment.

Subconsciously, the people will feel that the art is more important than they are. Of course, some of your clients may feel that the art *is* more important than the guests. Their desires must be taken into account, even if they seem to be incorrect. Sometimes, you'll be able to compromise on a design that provides *some* ambient light. A guest will just have to try to be witty or profound enough to compete with the art.

Accent lighting thrives on subtlety. A focused beam of light directed at an orchid or highlighting an abstract painting above a primitive chest can create a wondrous effect. People won't notice the light itself. They see only the object being illuminated. The most successful lighting effect achieves its magic through its very invisibility.

In the movies, if we can tell how a special effect has been achieved, we feel cheated. We don't want to know, because we want to think it's *magic*. In lighting, it should be no less the case. We want to see the effects of light, but the method needs to remain unseen, hidden, or an illusion. That subtlety is what will create a cohesive wholeness, allowing the design, the architecture, the furnishings, or the landscape to become the focus in the space; not the luminaries or the lamps glaring out from within them.

### **Task Light**

Task light is illumination for performing work-related activities, such as reading, cutting vegetables, and sorting laundry.

The optimal task light is located between your head and the work surface. That's why lighting from above isn't a good source of task light, because your head casts a shadow onto your book, computer keyboard, or ransom note.

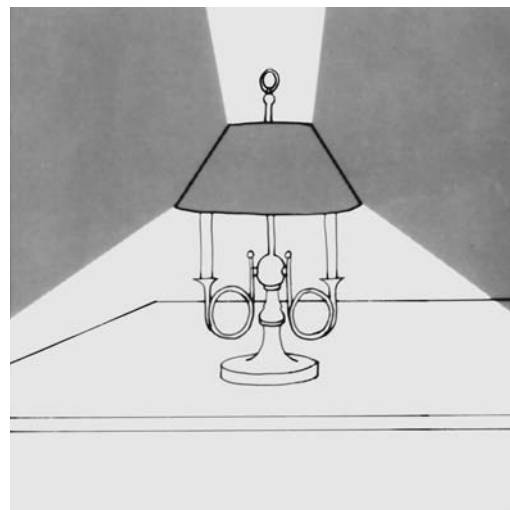
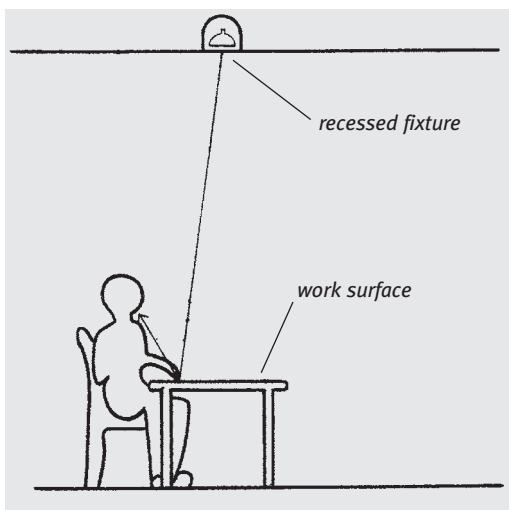
Overhead lighting or incorrectly-placed task lighting often contributes to the problem of "veiling reflection." This occurs when light comes from the ceiling directly in front of you, hitting the paper at such an angle that the glare is reflected directly into your eyes. This causes eye fatigue. Think of it as the mirror-like reflection of a light source on a shiny surface. The surface may be a magazine page, thermal fax paper, or any visual task that has shiny ink, pencil lead, or any amount of glossiness. The veiling reflection is a brightness that washes out the contrast of the print or picture (see Drawing 1.1).

Another related term is *photo-pigment bleaching*. When you try to read a book or a magazine outside, sometimes the brightness of the page makes it difficult to read. You end up moving to a shaded spot or tilting the magazine until the sun isn't hitting it directly.

A reflective surface is always a reflective surface, which means you can't eliminate glare if you are focusing light onto a mirror-like finish. What you can do is redirect the glare away from the normal viewing angle. That's why a light coming in from one side or both sides, instead of directly overhead, is more effective. It directs the glare away from your eyes.

Portable tabletop luminaries with solid shades often do the best job for casual reading, because they better direct the light and don't visually overpower the room when turned up to the correct intensity for the job at hand. You may be thinking, "Well, that's fine and dandy for some Euro-chic interior, but what about my Louis the Sixteenth library?" Well, a bouillotte lamp (see Drawing 1.2) does a great job of task lighting, as does a banker's lamp (see Drawing 1.3). Fluorescent linear lights are also a good source of task illumination at a desk with a shelf above the work surface or in the kitchen mounted under the overhead cabinets.

**Veiling Reflection** refers to the glare and eye fatigue resulting from overhead light hitting directly on white paper with black print, as if you were trying to read through a veil.



*Drawing 1.1 (left)  
Veiling Reflection (glare)  
occurs when task lighting is  
improperly placed directly  
overhead*

*Drawing 1.2 (right)  
Bouillotte lamp  
Here a traditional lamp  
performs a good job of  
providing task light*

Ambient light is the soft, general illumination that fills the volume of a room with a glow of light, and softens the shadows on people's faces. It is the most important of the four functions of light, but is often the one element that is left out of the design of a room or space.

As we go from room to room in Section Two, you will get examples of properly placed task lighting.

### Ambient Light

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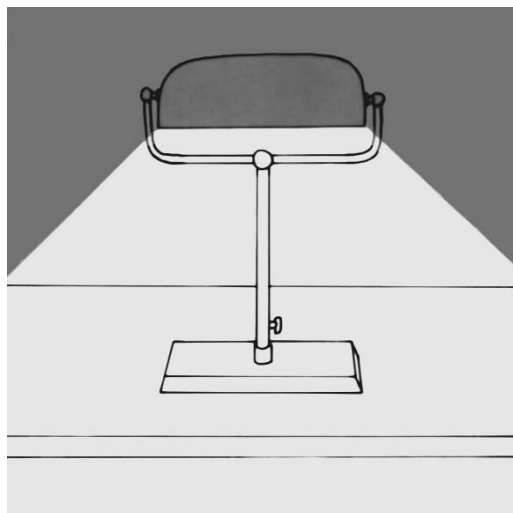
The best ambient light comes from sources that bounce illumination off the ceiling and walls. Such luminaries as opaque-bottom wall sconces, torchieres, indirect pendants and cove lighting can provide a subtle general illumination without drawing attention to themselves. You could call it the *open hearth effect*, where the room seems to be filled with the light of a glowing fire.

Just filling a room with table lamps is not an adequate source of general illumination. The space becomes a lampshade showroom, where the lamp shades are the first thing people see as they enter. Let these portable luminaries be a decorative source, creating little islands of light. Using those opaque shades and perforated metal lids can turn these luminaries into more effective reading lights. Utilizing other sources to provide the necessary ambient light lets the decorative luminaries create the illusion of illuminating the room, without dominating the design.

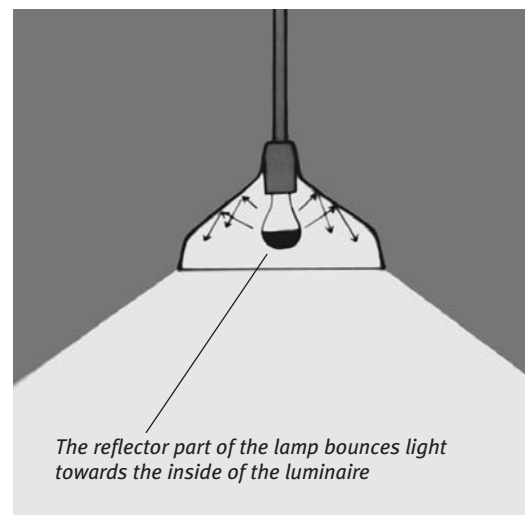
The inclusion of an ambient light source works only if the ceiling is light in color. A rich aubergine ceiling in a Victorian dining room or a dark wooden ceiling in a cabin retreat would make indirect light sources ineffective, because the dark surfaces absorb most light instead of reflecting it.

A second possibility would be to use a luminaire that essentially provides its own ceiling.

*Drawing 1.3 (left)  
Banker's lamp  
Another traditional type of  
luminaire that provides  
good task light*



*Drawing 1.4 (right)  
An RLM fixture coupled  
with a ceramic bowl  
reflector lamp provides a  
wide splay of ambient light  
without relying on the  
reflective qualities of the  
ceiling itself*



One luminaire that has been out on the market for many years is a metal shaded pendant generally known as a RLM pendant (Drawing 1.4). It has a painted white interior fitted with a silver bowl reflector lamp. The illumination is bounced off the inside of the shade itself, instead of the ceiling, to provide an adequate level of ambient light.

There are more modern versions of the RLM, such as the one shown in Drawing 1.5. The halogen source fitted within an integral reflector bounces light off the dish-shaped reflector and down into the room cavity.

There are many ways of getting ambient light into a room.

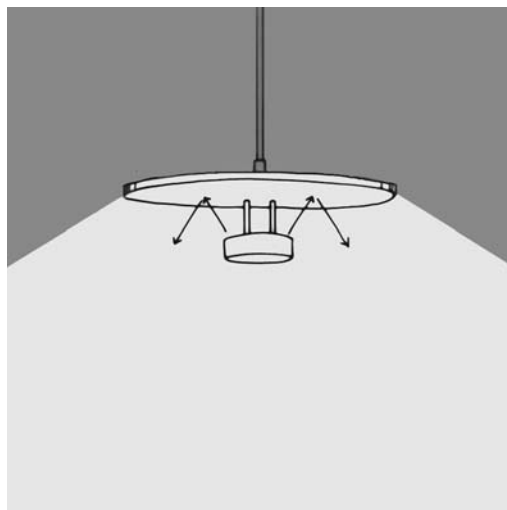
Ambient light, just like the other three functions, should not be used by itself. What you end up with is a *cloudy day* or *flat effect*, where everything is of the same value, without depth or dimension. It is only one component of well-designed lighting.

### Light Layering

A lighting design is successful when all four functions of light are layered within a room to create a fully usable, adaptive space. Good lighting does not draw attention to itself, but to the other design aspects of the environment.

Once you have a good understanding of the functions of light, you can decide which are needed for a specific area. An entryway, for example, desperately needs ambient and accent light, but may not need any task light, because no work is going to be done in the entry. However, there may be a coat closet, which would need some task-oriented illumination.

What we often see is a house lighted for entertaining only. It has a very dramatic, glitzy look. Many of the design magazines show this type of lighting design. Every vase, painting, sculpture, and ashtray glistens in its own pool of illumination. Yet the seating area remains in darkness. What are these people going to do for light when they want to go through the mail, do their taxes, or put a puzzle together with their family? Also, you should know that the design magazines reveal that they often use supplemental lighting specifically for photographing the rooms; those lights won't be there when someone is living in the house, and the effect won't be nearly as wonderful. What it does do is give clients a false sense of what type of illumination downlights alone can provide, which is often all that exists in the space.



*Drawing 1.5  
A more modern version of an RLM fixture uses frosted glass or a white metal to bounce the indirect light down into the room.*

Please remember that people entertain only part of the time. The rest of the time these rooms are used to do homework, clean, and interact with other family members. Highly dramatic lighting is not effective for normal day-to-day functions.

This doesn't mean that you should eliminate accent lighting. Just don't make it the only option. Simply putting ambient light on one dimmer and accent lighting on another provides a whole range of illumination level settings.

As your clients become more sophisticated about what they want, you should have the knowledge to give them what they want *and* need.

Once the project is finished and someone walks in and says, "Oh, you put in track lighting," it means that the lighting system is dominant. If they walk in and say, "You look great!," or, "Is that a new painting?," then you know the lighting has been successfully integrated into the overall room design.

One solution to this situation is to lighten the color of the ceiling. Sometimes the answer is to alter the environment rather than change the light luminaire. Instead of the whole ceiling being eggplant-colored, how about a wide border in that color with the rest of the ceiling done in a cream color or similar hue? Using a traditional chandelier with a hidden halogen source could complement the design while adding a '90's sensibility.

A wooden ceiling could be washed with a light-colored opaque stain, giving it a more weathered look without taking away from the wood feel itself, as simple painting would.

If your clients are dead-set against changing the color, a luminaire, such as the ones shown in drawings 1.4 and 1.5, will provide its own reflective surface.