

Scattered Comments on Architectural Lighting

An Interview with Richard Kelly

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One fine weekend several weeks ago A&E News interviewed Richard Kelly at a rather dimly lit midtown Manhattan club and later at his expertly lighted Fifth Avenue apartment. The point of the interview was to have Mr. Kelly comment, from his vantage point as a prominent lighting consultant with close and constant contacts with architects, on what he sees as the main issues in the lighting of the contemporary architectural interior environment.

This he did, taking into account such factors as the general quality of lighting design, the physical and psychological impact of lighting on a building's occupants, the lessons to be learnt from a study of the role of light in historical architecture, the issue as to whether or not lighting design can be taught in schools, the polarization controversy, and present-day light sources and fixtures.

The questions and answers appear in the following transcript.

Q Mr. Kelly, would you comment on the general quality of today's lighting design?

A Too bland. Too smothering. Even the theoretical objectives are too bland and smothering and tend to lack any kind of expression. In practical terms, this leads to a low key world-wide persistent glare.

Q Would you say this is true for most building types?

A Certainly for offices. Restaurants seem to be instinctively more interesting.

Q Do you think a bland office environment is conducive to concentration?

A In a way. Most routine work is boring and excitement on walls might make routine seem even duller. Of course, even the blandest wall won't make some work more attractive.

Q How does the psychological effect of lighting relate with the influence of acoustics, heat, etc.?

A Daylight, artificial light, firelight, sunlight, all have different psychological effect. Take fire light: we are trained from childhood to recognize fire, its color, its intensity as heat. That is why we tend to prefer incandescent to fluorescent lighting, since it is less artificial. But when all is said and done, lighting, rather than heating or acoustics or the other senses is what provides dominant motivation, since seven-eighths of our perceptive processes go on through the eyes. The remaining one-eighth is perceived through ears, feeling, smell, taste. Yet, one sense will set off 'memory' of others (e.g. firelight-heat-movement of flames).

Q What lessons does the use of architectural lighting in the historical styles have for architects today?

A In the Middle Ages the purpose of light in cathedrals was to direct basic attention upwards. In the renaissance, emphasis was on ornament detailed by light. In Gothic architecture, brilliance was placed high

up, causing man to feel less important, and reinforcing belief in a presence outside of, and above, man. In Baroque architecture, overhead strong oblique dramatic lighting from all sides borrowed this 'omnipresence' (God) outside of man. Freud described this effect as the 'oceanic feeling', felt at its most intense on a mountain top: brilliance above and around, and a minimizing of the ego. I consider Baroque as the most 'artificial' use of light, even though it was really a manipulation of daylight.

Q Do you see any modern application of these concepts?

A Yes, there is a similar attitude in corporate headquarters design with interest high up, as in the case of Baroque. Artifice is concealed by making the actual fixture unnoticeable (by using high windows and walls, coves, rotundas). The opposite approach puts attention-getting light areas below the eye level. This puts man above the area of interest and makes him feel more important than his environment. Example of this is the hearth-fire or lamplight producing mystery; but, in addition, its focal glow fascinates. Another example is the home: pools of light created by low-placed lamps produce a 'cosy' environment.

Q Are there other psychological effects that lighting can be used for in design?

A Light can be conducive to a subconscious recognition of order. An example of this is in chain stores, where even though aisles and stands may be in unavoidable sales confusion, a ceiling marked out in a strong light design gives a sense of order. This leads to respect for the establishment and, presumably, a happy and steadier customer.

Q What is there about light that is conducive to certain bodily functions (sleeping, eating, conversation)?

A Light scintillation stimulates all the senses. Even the sense of smell and taste- I consider these together -- can be stimulated, by the optical bombardment of tiny but sharp points of light. Hence, use of chandeliers or lots of candle flames stimulates appetite, even affects flavor of food and conversation. Also, total light can be made variable to lower or higher intensity, to key the sense activities of diners. For example, a mid-town Manhattan restaurant turns up its lights to higher key during lunch to induce a faster turnover, since people are thus able to relax less.

Occasionally in work, irritation or friction caused by light may make imagination with bits of memory ready to function easier, stimulating faster thought patterns. In reading, the ideal illumination situation is enough foot candles to be able to perceive words faster. However, the necessary footcandles differ in every environment. For sleeping, light must serve to quiet visual perception and distraction, but who knows if total darkness is best? Many people like a dim light for a sense of security.

Q How much light design aptitude can be taught?

A The architect must be able to profit by an awareness of a lifetime of seeing. Architectural school can do little but make you aware 1) of the variation in light and form in environment, and 2) of the physical qualities of light. In any case, creative work presupposes talent.

Concepts must be understood first: the light meter comes in useful afterwards. Contrast differences rather than absolute quantities are important. Of course, more footcandles are all to the good, but they must be matched with corresponding consideration of contrast, etc. Thus, outside an office window light intensity may be terrific (10,000 fc), so that the office interior ceiling has to receive high intensity electric light to reduce the ratio.

Q What are your views on the controversy over the use of polarization?

A Polarization can help perception. With the same light intensity you can get more contrast between words and paper, but this is not necessary for some tasks. I have found one advantage of polarization in that it enables me, with the same amount of concentration, to read the meaning of words, rather than merely reading type words. Much of the controversy has to do with the materials and technique of polarization rather than with the principle. Polarization in architectural light practice is still almost always impractical.

Q What are your views on the 'quantity of footcandles' controversy?

A The quicker we see, the faster the communication. But if all we want is to see our friends while conversing or while eating, there's no need for intensity (although even then, we want enough light to see facial expression and what the walls are made of) ; but this doesn't need high intensity.

Q How would you evaluate the current status of development of commercial light sources and fixtures?

A I'm afraid there is more known about lighting than is actually practiced. What happens is that the manufacturer invests in tooling and he is then stuck with this investment, which tends to slow down prompt application of new knowledge. For example, the incandescent lamp is outmoded for large library reading rooms because you cannot get the required intensity and quality of light without overheating. You'd need enormous amounts of air conditioning to get rid of the heat. This often limits lighting to below desirable intensities.

Q Do you see more efficient light sources in the offing?

A The multi-metallic vapor lamp is more efficient, but at the moment it is made in such few sizes that this limits its usefulness. For instance, it is hard to use indoors because there is rarely enough height to obtain sufficient diffusion (a 400 watt, metallic vapor source has 9 times the efficiency of an equivalent incandescent lamp. Thus, at 8'-6", diffusing material would be too bright). Another light source is the iodine quartz lamp, which is a very efficient incandescent lamp; oxidized tungsten is redeposited on the coil to improve lamp life. (If it were redeposited in the right place, a lamp could last forever). This, and other incandescent lighting, is thus certainly not obsolete: it is so easy to control.

Q Do you see a future in electroluminescence?

A Due to the color wave lengths of the fluorescent materials used in the electroluminescent process, colors are strange, thus limiting use. Also, its light output is very, very low. It is best used for self-illumination (dials and interior signs). Its value for lighting other objects has yet to be proved. Its chemical components still tend to deteriorate, and light is thus unstable and its performance unpredictable.

Q How about commercial fixture design?

A I find the physical design of a great many commercially available fixtures inadequate, chiefly because of uncontrollable surface glare. Source brightness should be eliminated at the fixture. The present trend is to spread more light, but less usable light from a lamp, thereby heightening source glare. Fixtures and lighting systems are plentiful; it is the resultant character of lighted environment which these produce that needs improvement.

Q How do you go about obtaining fixtures satisfactory to you?

A Usually I do not design my own fixtures-the cost of doing this is too high and tends to establish a psychological barrier with the client, who usually cannot see the justification of spending the extra money. I prefer to have large manufacturers develop fixtures from their own best prototypes, but to resist the temptation to use outdated molds and processes.

Q How can light be used as an inducement to movement?

A Strong focus serves as a great drawing power. This is obtained by creating excitement of interest in a desired direction. Controlled glare can emphasize paths of major traffic (by foot or car). Stores use this, for example, in lighting escalators, and by making bright surfaces visible at distances. Night clubs, restaurants create fantasy patterns of light. This can cause 'movement of interest' even when one is seated in one place --what you can call 'dynamic mystery'.

At New York's Four Seasons, this was brought about by a play of light on metallic-chain curtains, flowers, trees, and sculpture, adding scintillation.

Q What is the role of daylight in determining a lighting environment?

A Daylight can lead to endless complications particularly at the perimeter of office buildings having large glass areas. At Seagram House, dark glass reduced brightness by $\frac{1}{2}$ at the perimeter. In the absence of dark glass, one often has to sit with one's back to the window to avoid the glare. At Seagram, a 50 per cent reduction via dark glass was supplemented by a luminous ceiling to reduce glare contrast between sky and ceiling. At Bankers Trust, also on Park Avenue, there are smaller windows and dark glass. 3'x3' extremely low brightness fluorescent fixtures on a 6'x6' module are combined with air conditioning. These use a new patented darklight louver. I consider this a big advance in control of fluorescent light.

Q Mr. Kelly, to sum up, what in your view are the chief problems of lighting as a determinant of environment which you would want to point out to the architect?

A The speeding up of day-to-day existence, at work and at play, has caused people more and more to be unaware of what they see. This becomes critical in architectural schools, which train future creators of what is visible in our environment. But subliminal perception goes on. Until recently very few people paid any attention to this, and little research into perception was done. This has changed, in that much basic research is being done. The trouble is that it is not being applied. Too few people are aware of the research that has been accomplished and you have to study how to apply it before it can be of use. What research material has been produced is unavailable to architects. In general, I believe strongly that the architect's chief task is to learn to perceive the real importance of strong, controlling, visual environment patterns.

Mr. Kelly, a profile of whom appeared in A&E News in October 1962, is a native of Zanesville, O. and a graduate of Yale University. He has served as lighting consultant on such projects as the Seagram Building, General Motors Technical Center, the headquarters of Bankers Trust Co. and a number of buildings at Lincoln Center, including Philharmonic Hall, New York State and the Vivian Beaumont Theaters.