87. Urban Lighting Patterns in Japan: Public and Private Implications Glenn SWEITZER ; The University of Tokyo, Tokyo, Japan

Abstract

Urban night-lighting patterns in Japan are considered for commercial streets, facades, and rooflines. Light source type and location, intensity, distribution, and color temperature are compared for contemporary and historical precedents. It is suggested that contemporary urban night-lighting in Japan is being used to expropriate public space for private gain. Means to integrate control of public- and private-urban lighting for mutual benefit are presented. User surveys are suggested as means to improve the basis for urban lighting guidelines and standards.

Background

Commercial streets in urban Japan can be readily identified by their abundant lighting. Surface-mounted as well as free-hanging light sources are common for ground level displays if not for, in addition, advertising on upper level facades or even rooflines. Moreover, these light sources are often unshielded to both the foveal and peripheral fields-of-view and are, sometimes, moving or flashing in order to compete for attention. This results in a lively although complicated setting for performing the basic public visual tasks of detection, recognition, and identification (1). Thus, paradoxically, commercial as well as private interests may be limited.

Street level lighting emanates from public and private (fixed or portable) outdoor sources as well as those for private window- and interior-displays. Their contributions are typically varied and change by time-of-day. For example, many commercial establishments display their goods directly to the street and use portable light sources that must be located and adjusted daily. Thus supplementary public lighting may be redundant, at least until closing time, when roll-down doors are typically used and conceal lighting sources from open- or window-displays.

Street facades meanwhile are typically illuminated in one of two ways: 1) by illuminated signs extending perpendicular from facades, much as large colored flags did from their precedents, or 2) by high-intensity lights washing the walls, from above or below. In either case, nearby windows, whether workplaces or dwellings, can thus be adversely affected by this lighting.

In addition, rooflines above major commercial centers are typically ablaze with colored lights, often moving and/or flashing to arrest attention from afar (2). These lighting arrays however are typically mounted on partially-open screens designed to conceal rooftop water towers or other mechanical equipment. Nevertheless, their light sources are highly visible from the windows of neighboring buildings as well as from street level.

Otherwise, there is comparatively little lighting in neighboring residential areas, where the windows of many dwellings are traditionally closed after dark. There is considerable pedestrian and bicycle night traffic nonetheless, including children returning alone from school activities. The limited available street lighting provides pools of light rather than uniform coverage.

Method/Procedure

Examples of the above commercial street, facade, and rooftop lighting are considered from a user's viewpoint. Distinctions are made between public and private lighting services (3).

Results/Discussion

Current urban lighting patterns in Japan appear rooted in long-standing traditions. Commercial lighting typically reaches into the public right-of-way to lure if not inconvenience prospective consumers. Once limited to a common vocabulary of hanging- or ground-based lanterns fitted with candle sources, their contemporary counterparts are much more varied in size, intensity, and color temperature.

The bright ground level light sources may complicate visual tasks by causing surrounding areas to appear darker, underlighted, according to the adaptive response of the human visual system. Meanwhile the facade and rooftop sources may distract or even annoy pedestrians let alone vehicle drivers. In addition, the latter two sources often appear unrelated to their surroundings; in effect they dematerialize their host buildings. Integrated controls of public and private light sources could include hardware (e.g.dimming) as well as software (e.g. scheduling).

Conclusions

The basic aims of urban lighting are distorted in many urban commercial areas in Japan. Means to improve these can be considered in public and private terms.

Control of street-level lighting, outdoors and indoors, could be integrated to provide better balanced surface luminances. Likewise, public street lighting not needed during nighttime commercial hours could be dimmed or turned off.

Facade lighting should respect the occupants of their host- as well as neighboring-buildings. Commercial facade lighting should be limited to lower levels, calling attention to entrances to services on upper floor levels rather than shouting from above. At the same time, window exposures should be protected from undesirable shading of daylight or nighttime lighting effects.

Rooftop lighting meanwhile could be integrated into the architecture of its host buildings and surroundings rather than afixed independently. These lighting sources could be limited to specific commercial zones, by area and special effects. In this way, private lighting sources can effectively contribute to public awareness.

Improved urban lighting can make cities more distinctive and more comprehensible while limiting unnecessary use of electricity. It is suggested that user surveys be used to improve the bases to optimize these benefits. Only then can improved urban lighting guidelines and standards follow.

References

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