

BASICS FOR AESTHETICAL ANALYSIS OF THE LIGHTING DESIGN

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Abstract

This paper shows the main ideas for the aesthetical analysis of the lighting design by the relationships between the elements of the visual perception phenomenon: individual, object, lighting.

INTRODUCTION

The aesthetical analysis of the lighting design may be developed by a conceptual system that considers the elements of the visual perception phenomenon: individual, object, lighting. Between this elements, some necessary relationships must exist: 1. the lighting must be thrown over the object; 2. the object must be placed into the individual visual field ; 3. the individual must have the intention to perceive the object.

In this paper, the three elements of the visual perception phenomenon are analyzed from different point of view, such as the phenomenological philosophy (in the case of the individual), appearance categories (for the object) and the semantic, morphologic, syntactic aspects (for the lighting analysis).

On the other hand, the word “aesthetic” is taken in its two usual meanings: 1. as art theory; 2. as perception ability.

2. THE INDIVIDUAL

The phenomenological philosophy explains the perception as an intentional act, that is to say, this philosophical point of view considers the contact between the individual and the real experience. On this way, the first presupposition is that we do not see the total object (the *noumeno*), but only one of its faces, that is to say, one apparition (the *phenomenon*).

In different perceptual acts across the time, a sedimentation of the experience on the consciousness is produced, and, if the perceptual acts are concordant between themselves, the object arises in the consciousness as an ideal construction.

From this presuppositions, the object constructed by the individual will have the characteristics given from the experience conditions: material characters of the space (object) and lighting design aspects (lighting).

3. THE OBJECT

An object is an entity that assumes the first plane character regarding its context. On this way, the context is necessary for the perception. From the phenomenological point of view, the perception has a structure presented as the necessary relation between object and context. Here the goal is to study the reaction of the object when the lighting falls on it. On this way, regarding the lighting the object may be studied by the next concepts:

3.1.Spatial delimitation: It indicates the scheme of relationships between limits (in the case of an object) or parts (in the case of configurations). This scheme may be studied by the concepts developed by Cesar Jannello: formatrix, size, planar saturation.

3.2.Color: It indicates the spectral distribution of light. The associated concepts are: chromaticness, hue, value.

3.3.Appearance: It indicates the spatial distribution of light. The associated concepts are: absorption (total, partial), permeability (reflection, transmission), diffusivity (regular, irregular).

3.4.Texture: It indicates the kind of termination of surfaces, and it may be bidimensional or tridimensional. The associated concepts are: texture unit, texturing element.

4. THE LIGHTING

GENERAL STANDPOINT

The different situations, objects or events can be analyzed by a scheme that considers three levels or points of view: semantic, morphologic and syntactic. Each one of these levels focus on a specific aspect of the object or event, and this may be expressed by questions and its answers, as shown in the next frame:

Level	Question	Answer
Semantic:	what is this?	analyzes the meaning of the object.
Morphological:	which are its characteristics?	analyzes the description of the object.
Syntactical:	which is its structure?	analyzes the construction of the object.

This scheme of three levels is specially useful to study the object of art, and if it is specifically applied to the stage lighting considered as aesthetic work, it is possible to reformulate it.

Level	Applied on lighting
Semantic	significant aspects of lighting
Morphologic	visual aspects of lighting
Syntactic	temporal aspects of lighting

Before continuing with the development of the different levels , it is necessary to explain how the terms “light” and “lighting” will be used in this text. ”Light“ is the simple radiation of the source considered as the raw material used for the designer; “lighting” is the result (it may be said the creation of work) obtained from the designer. This is the same difference as well as between “pigments” and ”picture” in the case of a painter.

In order to understand more easily the ideas here developed, it is convenient to start by the exposition of the morphological level, continuing by the syntactical level and finishing by the semantically level.

(Note: The ideas here presented were developed originally to be applied in stage lighting design, but the author considers that they may be applied to other activities, i.e.: architecture, etc.)

4.1 MORPHOLOGY

All things we see can present different appearance depending on the way in which the light is thrown over them; this is a fact that we can observe in our daily experience. In stage lighting, a lighting situation created for a determined passage of a play is called a lighting effect. A lighting effect is composed by combination of an amount of lighting instruments, that is to say, it may be defined as a lighting scheme. In turn, the smallest component of this scheme is the source of light (a determined lighting instrument). Morphologically, a source of light can be specified by six factors: position, intensity, color, diffusion, size, form; it can be expressed as follows:

$$L = P, I, C, D, S, F$$

From this expression, it is possible to define a determined lighting situation: a lighting effect or scheme (LS)

$$\begin{array}{r}
 \text{LS} \quad L1 = P1, I1, C1, D1, S1, F1 \\
 \quad \quad L2 = P2, I2, C2, D2, S2, F2 \\
 \quad \quad \text{-----} \\
 \quad \quad Ln = Pn, In, Cn, Dn, Sn, Fn
 \end{array}$$

But the lighting scheme is visible only if it falls over an object or spatial situation. From a morphological point of view, a spatial situation can be considered as a combination of geometrical solids (bucket, cone, cylinder, sphere) and planes. Then, a lighting scheme (LS) over a spatial situation (SS) produces an aesthetic expression (AE):

$$\begin{array}{r}
 \text{AE} = \text{LS} \quad L1 = P1, I1, C1, D1, S1, F1 \quad \text{buckets} \\
 \quad \quad \quad L2 = \dots\dots\dots \quad \text{cones} \\
 \quad \quad \quad \dots\dots\dots \quad \text{cylinders} \\
 \quad \quad \quad \dots\dots\dots \quad \text{spheres} \\
 \quad \quad \quad Ln = Pn, In, \dots\dots\dots Fn \quad \text{planes}
 \end{array}$$

Continuing, the morphological factors will be explained with a short definition and a brief commentary about their aesthetic function.

4.1.1. Position: It indicates the point from which the light is thrown over the object or the space. In a LS, the different positions produce different chiaroscuro relationships on the object; then, different visual modulations can be observed depending on the position of the sources.

4.1.2. Intensity: It is the level of luminosity of the light. The intensity is what painters call value, the clearness or darkness of a color. In a LS, the intensity produces the attention center on a space.

4.1.3. Color: It is the kind of light emitted by a source, that is to say, it is its quality. In a LS, the color produces a determined atmosphere. On this way, the color is perhaps the morphological factor that more strongly influences psychologically.

4.1.4. Diffusion: It is the way in which the light is emitted by the source of light. The diffusion can be considered as texture of light , and, on this way, it may be soft or hard.

4.1.5. Size: It is the opening of the source. The size can produce an homogeneous perception if it is wide (the hole space is lighted by the same light), or heterogeneous perception (only a part of the space is lighted by a light).

4.1.6. Form: It is the different limits that a light can assume over an area. The form produces different sections on an area or space, and, on this way, it is an important factor in visual space composition.

4.2 SYNTAX

All changes are produced across the time; then the time is the condition of possibility of changes. In stage lighting design, the lighting generally changes during the play: a change exists when in one lighting effect its morphology varies becoming the next lighting effect . Then, a lighting design may be considered as a succession of lighting effects.

The syntax is what permits to define the structure of the lighting design by the relations between its different lighting effects. That is to say, the syntax defines the visual rythm of a performance by the mode of articulation from one lighting scheme to another adjacent. For this reason, the study of time as composition element is very important in the aesthetics of stage lighting.

The changes in stage lighting can be analyzed by six categories: variety, velocity, permanence, segmentation, orientation, evolution. Similarly to the morphological factors, the syntactical categories will be presented defining each one and explaining their aesthetical function.

4.2.1. Variety: It is the amount of lighting effects componing the whole design. During a performance, the lighting changes generally when the dramatic tension varies. For this reason, the amount of lighting effects depends on the variatons in the dramaticness of a performance.

4.2.2. Velocity: It is the time in which a lighting effect changes to the following. By the velocity it is possible to perceive the changes if it is quick, or be not conscientious about the changes if it is slow.

4.2.3. Permanence: It is the time in which the lighting effect stays on stage. The permanence of a lighting effect may be long or short giving during this time a determined mood to a passage of the performance.

4.2.4. Segmentation: It is the cluster of consecutive lighting effects having a similar visual aspect. The segmentation gives to the performance a visual continuity if the lighting effects are similar or a visual discontinuity if the lighting effects are different. By different segments it is possible to indicate the general character of great passages of the performance.

4.2.5. Orientation: It is the way of correspondence between the lighting effects and the other scenic facts. A lighting effect can be produced simultaneously with other scenic fact (i. e.: the

entrance of an actor), or successively with it (before or after). By the orientation it is possible to give importance to a scenic fact (simultaneity), or to preannounce it (successivity).

4.2.6. Evolution: It is the cluster of consecutive lighting effects involving the meaning of a determined passage of the performance. This cluster is called "form", since we can understand a form when we know its meaning; then, the evolution refers to the development of a significance or sense. Generally, but not necessarily, a form is composed by more of one segment. The evolution is important because it gives the possibility to relate the syntactic level with the semantic level of lighting.

4.3 SEMANTIC

When lighting is used with aesthetic purposes, specially in performing arts, it may be used as a communicative element. On this way, it is not possible to say how a lighting effect must be composed in order to have a determined meaning because it depends on the other elements, that is to say, the context. However, some ideas can be developed to understand the lighting when it is used as a sign. A sign is a material element used with a meaning conventionally accepted. A sign can be only spatial, only temporal, or both spatial and temporal; to this last case concerns the lighting. Then, we may say: in stage lighting, semantic is the syntactical development of a morphological organization. In a performance, the lighting may assume different meanings, and we can identify them by the semantic units: actor units, space units, time units.

The lighting may mean:

4.3.1. Actor units: a) social attitudes or mental attitudes; b) human characters or non human characters.

4.3.2. Space units: a) interior or exterior; b) cultural spaces or natural spaces; c) real spaces or unreal spaces.

4.3.3. Time units: a) past-present-future relationships; b) real time or psychological time.

5. CONCLUSION

As can be seen, the aesthetic aspects of lighting can be analyzed by a conceptual system that considers all aspects of lighting: visual, temporal and significant, as well as the relationships between lighting, object and individual. It may be used not only to study lighting designs yet performed, but too, to aid the lighting designer in her/his creative process. In addition, the ideas here developed may be applied both in theoretical considerations and in practical activities. Finally, this conceptual system provides us an adequate terminology to study the aesthetics of the lighting design without the necessity to use technological terms.

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Note: This paper exposes summarily the main ideas of a further book of the author about the aesthetics of lighting.

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