William Lam, lighting designer and dedicated theoretician of qualitative lighting design.

3.1.3.2 William Lam

With his differentiation between the basic functions of light Kelly made a substantial contribution towards the theory behind qualitative lighting design. He provides a systematic presentation of the means available. The question that still remains open is: according to what criteria are these means to be applied? The lighting designer is obliged to continue to depend on his own instinct, experience and the inadequate support provided by the quantitative criteria laid down in the standards when it comes to analysing the particular lighting context – determining the special features of the space, how it is utilized and the requirements of the users.

Two decades pass, however, before William M. C. Lam compiles the missing catalogue of criteria: systematic, context-related vocabulary for describing the requirements a lighting installation has to meet. Lam, one of the most dedicated advocates of qualitative lighting design, distinguishes between two main groups of criteria.

He first describes the group of *activity needs*: the needs for information related to specific conscious activities. To understand these needs it is essential to know the characteristics of the various visual tasks to be performed; analysing activity needs is therefore in line with the criteria laid down for quantitative lighting. As far as the aims of lighting design are concerned, there is general agreement on this point; the aim is to design functional lighting that will provide optimum visual conditions for the specific task – be it work, movement through a space, or leisure activities.

In contrast to the advocates of quantitative lighting design Lam objects strongly to uniform lighting aligned to the respective most difficult visual task; he proposes a far more differentiated analysis of all the activities that will take place according to location, type and frequency.

Even more important than this new evaluation of a group of criteria that already existed, is what Lam calls his second complex, which comprises *biological needs*. In contrast to activity needs, which are derived from man's occupations with specific tasks, biological needs covers the psychological need for information, the more fundamental aspects of the human relation to the visual environment. Whereas activity needs arise from specific conscious activities and are aimed at the functional aspects of a visual environment, biological needs comprise mainly unconscious needs, which allow us to evaluate a situation from an emotional point of view. They are concerned with our feeling of wellbeing in a visual environment.

In his definition of biological needs Lam presumes that our attention is only dedicated to one visual task in moments of greatest concentration. Man's visual attention is almost always extended to observe his entire surroundings. Any changes are perceived immediately, behaviour can be adjusted without delay to adapt to the changed situation.

The emotional evaluation of a visual environment does not only depend on whether it provides the required information in a clear fashion or whether it withholds it from the observer – the feeling of unease that arises in confusing situations. We have all experienced the feeling of being disoriented in the mass of visual information at an airport or when looking for a specific office in a local authority building.

For Lam the first of the basic psychological needs for environmental information is the need for orientation. Orientation can be understood in this case first in a spatial sense. It refers to how well destinations and routes can be identified: the spatial location of entrances, exits and what the environment specifically offers. This may be a reception, a special office or the individual departments of a department store. But orientation also comprises information about further aspects of the environment, e.g. the time of day, the weather or what is happening around us. If this information is missing, as may be the case in closed spaces in department stores or in the corridors of large buildings, for example, we feel the environment to be unnatural and even threatening; only when we have left the building can we suddenly make up for the information deficit – we establish that it has become dark and started to rain, for example.

A second group of psychological needs is targeted at how well we can comprehend surrounding structures. It is important that all areas of the spaces are sufficiently visible. This is a decisive factor in our feeling of security in a visual environment. If there are niches and corridors we cannot see into or parts of a space are poorly lit, we feel uncomfortable and unsafe. Dark corners, e.g. in subways or dark corridors in hotels at night, may contain danger, in the same way as overlit areas.

Comprehension of our surroundings does not mean that absolutely everything has to be visible, it comprises an element of structuring, the need for a clearly structured enviroment. We feel that a situation is positive when the form and structure of the surrounding architecture is clearly recognizable, and when important areas are designed to stand out against the given background. Instead of a confusing and possibly inconsistent flow of information the space thus presents itself as a clearly structured whole.

When accentuating specific areas it is not only visual tasks that traditionally receive attention that should be underlined. A view outside or the presence of other points of interest, e.g. a work of art, can be equally effective.

A third area consists of the balance between man's need for communication and his right to clearly defined private spaces. Both extremes, complete isolation and complete public exposure, are felt to be negative; a space should promote contact to other persons, while at the same time allowing private spaces to be defined. A private space can be created by defining an area with light: a seated area or a conference table within a large room, for example, and making it stand out from its surroundings.

3.1.3.3 Architecture and atmosphere

Both main groups of William Lam's criteria describe man's needs, his needs for a functional and perceptually sound environment. Besides this analysis, which is based on the needs of man as a perceiving being, it must not be forgotten that light and luminaires also make a substantial contribution towards the aesthetic effect of architectural design. When Le Corbusier describes architecture as "the correct and magnificent play of masses brought together in light", he underlines the significance of lighting on the design of buildings.

Lam's demand for a clearly structured visual environment comes very close to fulfilling this task, but does not cover all aspects. It is certainly possible to structure a space according to the psychological needs of the users by applying different forms of lighting. Any decision to go for one of these approaches implies a decision to create a different aesthetic effect, a different atmosphere in the space. Apart from merely considering the needs of the perceiving being it is also necessary to plan the interplay of light and architecture.

As with user-oriented lighting design, light also has a supporting function in architecture. It is a tool for rendering the given architectural structures visible, and contributes towards their planned effect. Lighting can go beyond this subordinate role and itself become an active component in the design of the space. This applies in the first place for light that is not only able to render architecture visible, but also to enhance the intended appearance. This applies primarily to luminaires and their arrangement. Luminaires can be discreetly integrated into the architecture – e.g. via recessed mounting in the ceiling. The fixture itself is not visible, it is only the light that has effect. But luminaires can also be added to architecture: in the form of a light structure, an alignment of spotlights or a light sculpture, the lighting installation itself can become an architectural element that can purposefully change the appearance of the space.