

# KEYNOTE lecture CIE Midterm Meeting 2021

## An integrative perspective on dynamic lighting, and how it should be studied

Yvonne A. W. de Kort

### Abstract

#### 1. Motivation, specific objective

Scientific literature tells us that lighting has the potential to make compelling contributions to physical and mental health of individuals. Industry, project developers and even individual users appear eager to ride this wave of promise and harvest the relevant biological and psychological effects that isolated research outcomes promise. But we are gradually learning that in lighting, the devil may not be in the details, but rather in the larger whole. Integrative lighting was coined by the CIE to refer to lighting that is specifically intended to integrate visual and non-visual effects and to produce beneficial physiological and psychological effects on humans. The term captures what many in our domain strive for but at the same time is still a tall order for researchers and designers alike: integration may well prove to be a more formidable ambition than hoped. The current presentation will reflect on relevant challenges and how to potentially tackle them, specifically for the investigation of dynamic lighting.

#### 2. Methods

We performed a structured review on 'dynamic light' and have performed a number of studies on this phenomenon in controlled laboratory conditions as well as field settings. Without exception, the ambition was to take an integrative perspective in each of these studies, through the inclusion of measures capturing subjective and objective responses, responses that were experiential, behavioural and physiological in nature.

#### 3. Results

The review taught us that the effects, nature, and even the intent of dynamic lighting are under investigated and inconsistent across studies and implementations. But embarking on the empirical study of this phenomenon ourselves, numerous theoretical, empirical and particularly methodological issues arose, that almost disheartened us in our, perhaps overly ambitious, goal to bring progress here. This paper will highlight some of the obstacles encountered – from knowledge gaps on individual mechanisms, to wildly varying temporal scales at which they work, to limitations in the lab and in the field in intervention, measurement and analysis techniques – and aims to present ideas to overcome some of them.

#### 4. Conclusions

Integrative Dynamic Lighting - Are we there yet? It may come as no surprise that, to date, the only reasonable answer to this question is "no". But importantly, we would like to convey the message that the path towards it may call on us to not only perform *additional* research, but to also *reconceive research design*, in terms of how, when, and where we perform it, from a new, integrative perspective.