Volumetric light – photography based light rendering technique as artistic tool

Photography is a technology that makes things visible. In the age of mediated perception, the key issue is not so much the truth value based on the indexicality of photography, but rather the ability, based on indexicality, to make visible things that exceed our threshold of perception. The epistemological ability of photography is to expand our understanding of reality by producing a new kind of imagery.

The interpretation of binary data in digital images opens up the possibility for artistic research to examine the conditions of image representation algorithmically. Available image processing software offers a predefined set of different image editing methods, which are often applications of established image processing algorithms. In terms of my own artistic work, I have found various algorithmic methods that edit image data as directly as possible without additional layers to be the most interesting. In this case, the image data are loaded into the program's memory using a standard software library, after which the data can be processed using mathematical operations. In this process, the image is edited using an algorithm created by the user. In the case of digital photography, this way of working opens up the possibility of searching for and finding new types of image formats. Computational photography extends the indexical image to new realms of visual representation.

In my artistic research, I present a 3D rendering technique based on digital photography and photogrammetry, which we have developed to digitally project the light captured in photographs into a spatial form. Combining photography and computer graphics, the technique I call light volumetry is based on photogrammetry, in which a three-dimensional model is constructed using photographs taken of a stationary object. Instead of a 3D model, light volumetry utilizes the positions of cameras and the light captured in photographs, which is projected into 3D space. Finally, individual images or videos are rendered from the model. The method aims to depict light as a spatial entity rather than as a property of the object's surfaces. The models produced by the method are estimates and significant simplifications, and rather than providing a scientifically accurate description, they aim to create a speculative image of the actual phenomenon.

In the resulting images, the original space and its objects have been cut away. Light has filled the space and obscured the view. Light rays coming from different directions intersect with each other. I examine light volumetric images through the concept of noise.

The concept of noise, and the thinking behind it, is primarily linked to Claude E. Shannon's theoretical model of communication. In his model, noise manifests itself as the ratio of noise to signal in the communication channel. The outgoing message is always ideal, i.e. "noise-free" because Shannon explicitly left semantics out of his presentation. The transmission of a message is therefore not about the transmission of the semantic content of the message, but only about the effect of the communication channel on the transmission of the message. As a consequence of this theoretical background noise is often understood as an error or deviation from the desired signal, but in recent years there is a growing interest in philosophy for broader understanding of noise. In this paper I will unpack the concept of noise from the epistemological perspective proposed by philosopher Cécile Malaspina. Malaspina examines noise as an epistemological question and considers how epistemology deals with ambiguity. In empirical research in particular, noise can be viewed as a sliding threshold, where up to a certain limit noise (anomalies) can be included in the

results, but once the limit is exceeded, noise can no longer be ignored and its contribution must be clarified. According to Malaspina, such cases often also involve a paradigm shift.

Without the converging focus of the camera lens, light appears unstructured, as noise. The intersecting paths of the rays of light draw a radiant mist in the image, which contains all the images involved in the process. Individual images disappear, but the result is a new image.

How do we understand new forms of imagery, and what mechanisms of perception and thought can we apply to something we are seeing for the first time? In the context of technical images of today, I reflect upon Vilém Flusser's notion "To decode a technical image is not to decode what it shows but to read how it is programmed." To unpack a photographic image and its meaning, one needs to include the process of making it. In the paper, I will also discuss computational photography in the context of Flusser's media theory.

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