

Obituary for Prof. Dr. Arne Valberg (1938-2022)

For this document in English, see <http://color.li.tu-berlin.de/ArneValbergE22.pdf>

In German, see <http://farbe.li.tu-berlin.de/ArneValbergG22.pdf>

For a curriculum vitae (VC) of Arne Valberg in English, see

<http://color.li.tu-berlin.de/ArneValbergCV22.pdf>

I thank *Thorstein Seim* from the University of Oslo for this comprehensive list of the work of *Arne Valberg*.

Arne Valberg was born on 31 December 1938 in Norway and died on 1 July 2022.

During and after studying physics *Arne Valberg* and I (*Klaus Richter*) worked together for some years on colour projects in the *Laboratory of Colour Metrics* (LCM) at the *Physical Institute of the University of Basle* (Switzerland). *Dr. Karl Miescher* was then the leader of the LCM. The LCM was very active in the field of colour science between 1955 and 1975. *Arne Valberg* worked alternately at the University of Oslo (NO) and the LCM between 1961 and 1972. I worked alternately at the University of Giessen (DE) and the LCM between 1963 and 1970. Therefore we worked together with much fun during several time periods at the LCM.



Dr. Karl Miescher, and the students *Arne Valberg* (left), *Klaus Richter* (right) in Basle, 1966, and *Prof. Dr. Arne Valberg* of the *Department of Physics NTNU*, Trondheim (Norway), 2010.

Between 1961 and 1969 *Arne Valberg* and I met many top scientists of the colour field, for example *T. Holtmark* (NO), *G. Wyszecky* (CA), *D. B. Judd* (US), *W. D. Wrigth* (GB), *I. LeGrand* (FR), *M. Richter* (DE), *E. Ganz* (CH), and *P. Walraven* (NL). All visited either a Colour Conference in 1965 in Luzern (Switzerland) or meetings at the LCM. In 1969 at the first Congress of the International Colour Association (AIC) the LCM members presented four papers on colour topics [1] to [4].

Around 1968 *Thorger Holtmark* from the University of Oslo was the leader of the famous experiments on thresholds for complementary optimal colours. *Arne Valberg* and I were among 6 observers. This resulted in several published papers, see for example [5]. The LGM members used the famous three beam colour integrator for these experiments. Similar devices were build later in Berlin and Oslo for different additional experiments.

The main experimental result of approximately equal colour thresholds for complementary optimal colours is of high importance in colour image technology. In image technology the display colours red-cyan, yellow-blue, and green-magenta are complementary. They mix to

white.

In 1976 *Arne Valberg* received his PhD at the *Department of Physics* of the University of Oslo. After his time at the University of Oslo, *Arne Valberg* received in 1991 a professorship at the *Department of Physics at NTNU* in Trondheim (Norwegen). In Trondheim *Arne Valberg* soon became involved in the creation of an *interdisciplinary teaching project in neuroscience*.

Remark: In 1969 I received my PhD at the University of Basle and became professor for *Colour Metrics* at the Berlin University of Technology (TUB) in 1978. Later on *Arne Valberg* arranged an exchange of colour scientists. For example *Thorstein Seim* leads experiments with a colour integrator in Berlin. I joined experiments with a colour integrator in Oslo.

In 1990 *Arne Valberg* and *Bary Lee* invited me to join physiological experiments. Together we spent days and nights in the *Max Planck Institute for Biophysical Chemistry* in Göttingen to record the retinal spikes of a macaque monkey as function of the colour stimuli chromaticity and luminance. *Arne Valberg* has published many experimental results in [6].

In 2005 *Arne Valberg* [6] published his research results and of many others in the book *Valberg, A. (2005), Light, Vision, Color*, John Wiley & Sons, ISBN 0470 84902 9, 462 pages. In this book *Arne Valberg* managed to combine the physiology, the psychophysics, as well as the neural and brain processes of the visual system. It is a large advantage that this leads to the application for the visually impaired observers.

In 2009 *Arne Valberg* was the winner of the *AIC 2009 Judd Award of the International Colour Association (AIC)*.

Between 1975 and 2012 *Arne Valberg* joined often annual meetings of the *German Colour Center (Deutsches Farbenzentrum)*. At the meeting 2012 he visit an excursion to the permanent exhibition *Colour and Colour Vision* at the Berlin University of Technology (Technische Universität Berlin) TUB. A book *Colour, Colour Vision and Elementary Colours in Information Technology* was published at the meeting 2012. *Arne Valberg* is the co-author of this book, see [7]

Since 2018 this book with 135 colour figures is available in six languages (EN, DE, FR, ES, IT, NO), see in English (EN)

<http://color.li.tu-berlin.de/color/ES15.PDF> or
<http://standards.iso.org/iso/9241/306/ed-2/ES15.PDF>

Example ISO-test charts of the ergonomic standard ISO 9241-306/ed-2 are printed in this book. For this standard in three languages (EN, FR, DE), see

<http://standards.iso.org/iso/9241/306/ed-2/index.html>

This book therefore became an international reference for the introduction in the field of colour science and colour information technology.

The list below includes four of more than 100 publications of *Arne Valberg* and three others from members of the *Laboratory of Colour Metrics (LCM)* in Basle (Switzerland).

[1] *Valberg, A.* (1969), Simultaneous colour contrast, *AIC Color 69*, Stockholm, 237-246

[2] *Richter, K.* (1969), New opponent colour concept, *AIC Color 69*, Stockholm, 403-427

[3] *Miescher, K.* (1969), The natural colour conception, *AIC Color 69*, Stockholm, 1231-1240

[4] *Holtsmark, T.* (1969), Conflicting implications in Newton's Opticks, *AIC Color 69*, Stockholm, 1294-1304

[5] *Holtsmark, T. and A. Valberg* (1969), Colour Discrimination and hue, *Nature 224*, 366-367

[6] *Valberg, A.* (2005), *Light, Vision, Color*, John Wiley & Sons, ISBN 0470 84902 9, 462 pages

[7] *Richter, K.* and *A. Valberg* (2012), *Colour, Colour Vision and Elementary Colours in Colour Information Technology*, 82 pages

Arne Valberg sadly passed away on 1 July 2022 at the age of 83 years. We are sad and will miss *Arne Valberg* very much. I am grateful that I was able to work with *Arne Valberg* between 1963 and 2022. Arne was an exceptionally peaceful and friendly man, always with a friendly smile.

Klaus Richter,

Honorary Chairman of the German Colour Center (Deutsches Farbenzentrum DFZ), see
<http://www.deutsches-farbenzentrum.de>

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