

# Qualities of Colour

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## *Zusammenfassung*

Die Gültigkeit verschiedener Standpunkte wird in Bezug auf einige Experimente von Isaac Newton zum gekreuzten Prisma beleuchtet. Newtons eigene Sichtweise wird neben Goethes Betrachtungsweise(n) auch der seelisch-geistigen Anschauung Rudolf Steiners gegenübergestellt, wie sie in seinen Lichtkurs-Vorträgen diskutiert wird. Durch die Betrachtung von Goethes Herangehensweise an diese und ähnliche Phänomene wird ein neuartiges Verständnis seiner Farbenlehre offengelegt – nämlich dass Goethe innerhalb seiner Theorie mindestens zwei unterschiedliche Gesichtspunkte bezüglich der Entstehung prismatischer Farbphänomene angewendet hat. Die seelisch-geistige Anschauung, die Rudolf Steiner in seinem Lichtkurs vorstellt, kann als eine Weiterentwicklung von zwei verschiedenen Gesichtspunkten innerhalb der Goethe'schen Theorie gesehen werden. Es werden auch einige neue Variationen von Newtons Kreuzungsprismen-Experimenten beschrieben, die die Wirkung von Prismen bei tatsächlichen Spektralfarben mit der Wirkung bei Fotografien von Spektralfarben vergleichen. Hier zeigen sich wesentlich andere Resultate.

Schlüsselwörter: Goethes Theorie, Newtons Optik, Steiners Lichtkurs, aktives Sehen, gekreuzte Prismen, Newtons Experiment 5, Newtons Experiment 7, Farbqualität, Goethes Polemik.

## *Summary*

The validity of various viewpoints are recognised regarding some of Isaac Newton's Crossed Prisms experiments. Newton's own viewpoint is placed alongside Goethe's viewpoint(s) and also the soul-spiritual viewpoint of Rudolf Steiner, as discussed in his Light-Course lectures. From considering Goethe's approaches to these and similar phenomena, a novel understanding of his Theory of Colour is made obvious – that Goethe was utilising at least two different viewpoints regarding the formation of prismatic colour phenomena within his theory. The soul-spiritual viewpoint presented by Rudolf Steiner in his Light-Course can be seen as a development of two different viewpoints within Goethe's theory. Some new variations of Newton's Crossed Prisms experiments are also described, which explore the action of prisms on actual spectral colours as compared to photographs of spectral colours. When compared in this way, substantially different behaviours are displayed.

Keywords: Goethe's Theory, Newton's Opticks, Steiner's Light-Course, Active Vision, Crossed Prisms Experiments, Newton's Experiment 5, Newton's Experiment 7, Colour Quality, Goethe's Polemic.

## *Introduction*

Being able to entertain different viewpoints is a much needed ability in today's world. In the confusing multi-cultural world we now inhabit, it can be tempting to retreat to a single viewpoint, dismissing all others as wrong. Such behaviour patterns can easily lead to extremism of various kinds. Intolerance is also to be found in the world of science where it is often claimed that only a single viewpoint, a single theory, can be true in any scientific discipline. The popular versions of science offered to the public through the media mostly push this 'single theory' absolutism, but it should be noted that the leading-edge scientists themselves are usually much more open-minded.

This article will attempt to explore some prismatic colour phenomena first described by Sir *Isaac Newton* in his book *Opticks* (1704) – parts of Experiments 5 and 7 from Book One, Part I of the *Opticks*. In addition to the prism experiments described in Newton's *Opticks*, the author will show the results of some new variations of these experiments whereby photographs of prismatic colour phenomena are utilised<sup>1</sup>. Bringing the world of colour photography into these experiments allows an extra dimension to be explored. Is a colour photograph of a spectrum essentially the same as an actual colour spectrum in a prism experiment?

The following experiments take Newton's work as a starting point, but the ideas of *Johann W. Goethe* in his *Theory of Colour* (1810) and the work of Rudolf Steiner relating to colour will also be involved. In fact, at least four different viewpoints will be offered regarding the colour phenomena – the Newtonian viewpoint, two (or more) Goethean viewpoints and a soul-spiritual viewpoint as described by *Rudolf Steiner* in his *Light-Course* lectures (1919–1920). Attempting to entertain at least four different viewpoints may be difficult, but the effort is very worthwhile if it helps us to be more flexible in our thinking and less prone to dismiss unfamiliar viewpoints in a prejudiced way. Sometimes, different viewpoints will be in conflict, sometimes more of a reconciliation can be found, but after a good row, they can all still be friends – and we can all help to keep it good-natured by being able to see the different views! The world needs people who can see different sides in an argument.

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1 These experiments were first publicly presented at the Steiner Research Days event at the Glasshouse in Stourbridge, England on 29<sup>th</sup> September 2018 (*Starrett* 2018).