

Evidence

Study Questions for Lecture 2 (4. May 2022)

Newton's Investigations on Light and Color, Part I

Erik Curiel[†]

(date of version: 17. May 2022)

Reading: Newton (1672), “Letter of February 6, 1671/72, to Henry Oldenburg, Secretary of the Royal Society, Outlining Newton’s Researches on Light and Color”, pp. 47–52; see also Curiel (2018)

I give a brief, severely incomplete list of questions both to keep in mind and think about while doing the reading for next week’s lecture, and to review after you have completed the reading. Please come up with your own questions as well, to discuss in class.

1. Beginning from the moment at the beginning—the begin of the begin, as it were—where Newton realizes that the non-circular projected prismatic image does not agree with the contemporary understanding of light refraction, break down the subsequent series of questions, investigations and experiments into individual steps, each addressing a particular possibility. At each step, what is being used as evidence for what?
2. Is the evidence always positive, concrete and indicative, or is it sometimes negative, privative or modal? This question, for each of the terms, can be taken in two ways: first, does the evidence *consist of* something positive, concrete, indicative, or something negative, privative or modal? second, is the evidence *for a claim* that is positive, *etc.*?
3. Is there a cumulativity to the evidence? If so, what epistemic role does it play? Does it itself count as evidence over and above the contributions of its individual elements?¹
4. What role does theoretical knowledge play in the construction, formulation or identification of the evidence? Instrumentation?
5. What exactly is the evidential content of the *Experimentum Crucis*, and what does it provide evidence for? Do you agree with Newton’s assessment of its evidential content and weight?

References

Curiel, Erik. 2018. “Glossary for Newton’s Studies on Light and Color”. Unpublished manuscript, available at <http://strangebeautiful.com/papers/curiel-newton-light-color-glossary.pdf>.

[†]**Author’s address:** Munich Center for Mathematical Philosophy, Ludwig-Maximilians-Universität; Black Hole Initiative, Harvard University; **email:** erik@strangebeautiful.com

1. To speak the language of Bayesians for a moment: is the probability of the “hypothesis” conditioned on the conjunction of all the individual pieces of evidence taken *en bloc* higher than the probability resulting from applying Bayes’ Rule to the hypothesis sequentially conditioning at each step on each separate piece of individual evidence?

Newton, Isaac. 1672. "Letter of February 6, 1671/72, to Henry Oldenburg, Secretary of the Royal Society, Outlining Newton's Researches on Light and Color". In *Isaac Newton's Papers & Letters on Natural Philosophy*, edited by I. Bernard Cohen, 47–59. Cambridge, MA: Harvard University Press. English translation printed alongside the Latin original, itself published in the *Philosophical Transactions of the Royal Society*, 80(February 16, 1671/72):3075–3087.