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Reconstructive Charity in Controversies: Newton's Eye for an Optical Theory

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My aim is to explore how a controversy can be read and analysed in a charitable fashion, building on a case study, the polemical exchange that followed Newton's first publication in the *Philosophical Transactions* (Newton, 1671-72), in which Newton challenged prevailing orthodoxies concerning geometrical optics and modificationist theories of colour. None of the contemporaries found all of his tenets unproblematic, but a generation later his views became the orthodoxy, his individual preference judgements about hypotheses, the scientific methods, etc., became, to a large extent, shared by the scientific community. How can one account for this change, especially as interpreters still present polarised pictures of the roles of the contributors. Analysts debate even today how to reconstruct the positions in the controversy, yet the debated theory has become standard textbook knowledge hundreds of years ago.

In a discourse on facts (binary) truth-values appear to guarantee resolvability of conflicts, yet in a scientific controversy that involve complex utterances (i.e. not single claims) the closure need not entail resolution. It is clear, that Newton's theory was persuasive, but was the conversion rational? Did he actually had convincing arguments for his case? Practitioners of numerous disciplines have given rival accounts of the belated but pervasive victory of 'Newtonian' science, in line with their particular model of the development of science, production of knowledge, spread of belief, stabilization of experimental procedures, institutionalisation of science, etc. I attempt to give an overview of the debate, and discuss some philosophical issues concerning charitable interpretations, individualist and social epistemological accounts of knowledge-production, and unity and disunity in science. I also draw attention to methodological issues that emerge during the reconstruction of strategic manoeuvring in controversies, and the evaluation of complex argumentative exchanges in the 'mixed media' of texts and images.

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