

# Review of: "Objectivity and Honesty in Science: The case of Light Interference Phenomena"

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**Potential competing interests:** No potential competing interests to declare.

Overall, this is a highly interesting article that is well-written and well-researched. To my mind, it is publishable with minor revisions (which I assume translates to 4 stars in the *Qeios* system). The discussion of Thomas Young relies predominantly on George Peacock's 1855 biography, which is not a bad choice and thus not necessarily a point for criticism. However, a certain sloppiness runs through the manuscript, which I suggest the author may want to fix before submitting it to her (guessing from the name; my apologies if this is incorrect) journal of choice. I am not referring to language issues here; the writing is perfectly intelligible. However, certain issues concerning punctuation, footnotes and citations could and should be easily fixed. Furthermore, I believe that Thomas Kuhn's *The Structure of Scientific Revolutions* should be mentioned at some point, however briefly, since the article's central theme is the outsider Young's (light is a wave) struggle against the at-the-time mainstream Newtonian emission theory.

In the following, I will mention some local points. Most of my suggestions should be treated as optional rather than mandatory.

The abstract is clear and concise with little need for improvement. However, I am a little confused about the capitalization of the word "science." I assume the author has her reasons as this usage runs throughout the article, but it seems a bit awkward to me. Also, the full stop/period is missing after the final sentence. Finally, I wonder why there are no keywords, though this omission, too, may have been intentional.

The introduction, also, leaves little to be desired, providing a clear and succinct statement of the article's agenda. Furthermore, I like that the author explicitly states that her discussion will by needs be a little simplified at points. I would have liked captions providing additional information for the five pictures summarized as "figure 1." Finally, I do not know the meaning of the word "fructuous" and neither does my dictionary (I am sure it exists, but perhaps one could use a word that is a little more common).

The chapter on the "scientific context" is great too. I especially liked the Haüy-quote, which I will keep in mind and may use myself at some point. The emphasis of the scholastic culture of the time on mathematical formalism that will become important later in the article is highlighted here, which is good to set the tone. I suggest to put "emission theory" in quotation marks after introducing it with the word "so-called." Perhaps explain "Iceland spar" briefly in parentheses or a footnote. I am not sure if the author actually means "pretend" in the sentence "historians of science pretend that Newton adopted a dualistic theory."

The chapter on “Young’s reputation in GB” is well worked-out and executed also, highlighting the feud between Young and the at the time more well-known Lord Brougham, who championed the mainstream emission theory and thus becomes a harbinger for Young’s future troubles in France. Perhaps, this would be a suitable point to mention Kuhn’s *Structure of Scientific Revolutions*? I also liked the side-note that Young was “too rigorous” to be a physician, thus giving his patients the for the profession unduly impression that he was human and fallible (some things don’t seem to change much over time). I am a little confused by the author’s use of colons as in “He gave to this conflict: the name of *inferences*”. Perhaps this is meant as a stylistic device for emphasis but it seems a little awkward to me. “Actually, they might be a revenge ...” and “Brougham could be annoyed and ...” should read “they might have been ...” and “Brougham might have been ...”. Perhaps add that Emmanuel College is at Cambridge.

The chapter on “Young and the French School” is good too. However, I wonder what “the French School” is exactly? The chapter highlights Laplace’s iconic status at the time, his emphasis on mathematics, Newton and his calculus, but is any of this particularly French? Is “French School” a known, proper term or is it introduced by the author to summarize what she writes about academia in France at the time? Also, I would have liked a little more detail on the content of the letter that Young wrote to Laplace (but I understand that length issues may play a role here, of course). Language points: please change to “At this time, the French scientific community ...”, “he had never been bothered”, “he followed: ‘I am exceedingly interested in this point ...’”. Malus is introduced as if the reader was already familiar with him even though details only follow in the following chapter. Perhaps this can be improved. “And science becomes like a dogma or a belief” may be another good point to mention Kuhn’s *Scientific Revolutions*. The Young quote that starts with “It has been creditable ...” and ends in “labours of a rival” is missing context. I am assuming Young is being ironic here? The Young quote that starts with “But it seems ...” and ends in “his conclusions ... rage for abstraction” is confusingly sloppy. There are omissions marked by “[...]”, “[.]” and “...”. In the last case, the syntax of the sentence seems to be broken by the ellipsis. Is this the author’s or Young’s own ellipsis? The following sentence is missing the period/ full stop.

The chapter on Fresnel is very interesting and the author constructs and executes her argument very well. I would have liked a little more detail on Fresnel’s experiments early on, though I understand that the technical side is not the main focus of the article and length issues always play a role (perhaps move the description that is given towards the end of the chapter to the beginning?). Some language points: please change to “he participated in a demonstration,” “Fresnel was not a scholar so he could examine (erase ‘that’),” “relationship between Young and Fresnel (erase plural -s),” “they had participated in the measuring of the ... .” It is explicitly mentioned that some letters by Young were written in English. Does this mean all of the other letters cited are originally in French and translated by the author? I really like that the author does not fall into a black-and-white narrative but mentions that Young, also, was a morally questionable character at times. Occasionally, it is not entirely clear to whom personal pronouns or terms refer: “he was proud to have met **such an eminent scientist** (Young or Arago?),” “Arago announced that **he** had also ... (Arago or Fresnel?).” As with “Science,” I wonder why “Optics” is capitalized? The “Nature does not care about mathematics” quote is great to close the chapter. However, the way I understand it this quote is the author’s invention and has never actually been uttered by Fresnel in this way as far as we know? In this case, footnote 104 should be moved to the end of the preceding sentence ending in “it could not be true.” (Otherwise, it invokes the impression that this is a proper quote)

The conclusion is a great summary of the article. The long sentence beginning with “Even if in this case ...” and ending in “during their life” seems a little convoluted to my mind. I think readability could be improved here by breaking it up into a couple of shorter sentences perhaps. Language points: please change to “If a scientist followed his conceptions ...,” “he would not receive any recognition,” “he had his career to care about,” “Soon he would break with his friend,” “left it to the young Foucault to conduct it.” I wonder if the author means “Coincidentally or not” instead of “Surprisingly or not” at the beginning of the final paragraph.

I must admit that I am unfamiliar with the author’s citation style, so I will refrain from suggesting adjustments here. However, who “insists” in footnote 16? Is this a quote? By whom? Or does the author insist? In footnote 36, the proper technical vocabulary should be used. Waves “interfere” constructively or destructively (a term coined by Young, as the author also mentions). The latter means that they “cancel (out);” they do not “destroy each other” (well, of course, they do in a way, but it’s just not the term that is used in English). I understand that this may be different in French and I don’t mean to be nitpicky, but proper technical terms should be looked up when writing an article in a foreign language to my mind. I am confused by footnote 43: there surely weren’t three Lord Chancellors in 1830?

Many thanks to the author for composing this interesting article, the reading of which I very much enjoyed. I hope that my comments will be helpful and I wish the author every success with publishing her fine piece!