

A Field in Flux. Spread and Development of Newtonianism in the 18th Century

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Abstract

The onset of the 18th century saw both Scholastic and Cartesian doctrines commonly spread by means of academic textbooks. Newtonian physics also started to gain ground, just as some eclectic mixtures of approaches did. By the end of the century, Newtonian science was seen as the sole prevailing doctrine, although more recent scholarship recognizes the presence of some diverse schools of thought (Gaukroger 2010, 2016). What did this epistemic system look like exactly? How can we understand how this change came about? What actors were involved and how were they embedded in a particular environment? Newton has certainly received a lot of attention over the years, and his works and influence has been described extensively by traditional scholarship. Still, studies rarely consider the broader environment that fostered and advanced his ideas and approach and focus instead on case-studies. Qualitative assessment, focussing on Newton as the single propellor of change, overlooks the larger social environment. This makes it hard, if not impossible, to yield an integrated view of the entire network in which he operated, on which he had an impact, and which would have included a much more diverse cohort of scholars. Such a picture would be very helpful to better understand and contextualise ensuing qualitative narratives.

To offer an as integrated view as possible, I propose to study the dissemination of Newtonian science by building a multiplex, bipartite, diachronic network of the field of natural philosophy in the eighteenth century. To do so, I use the bio-bibliographical information of 191 publications dealing with natural philosophy and science, written by 111 unique authors. The data is drawn from the *Dictionaries of Eighteenth Century British and Dutch Philosophy* (Yolton et al., 1999, Van Bunge et al., 2003), which used to build a multiplex of ‘knowledge environments’—several environments where we can expect knowledge to be created, cultivated and transferred, including institutions such as universities and learned societies, and publication places. When working with historical agents whose data can be limited and fragmentary, proximity indicators can successfully create networks of knowledge environments, for which bipartite networks and projections show rich methodological opportunities (Latapy et al. 2008, Filho and O’Neale 2020). Concerning temporality, publication dates are the single most complete time-indicator, and an effective barometer for an author’s activity in the scholarly community. Using publication dates, I segment authors in three different time-slices that capture significant cohorts of thinkers and that, qua data, also include adequate numbers of authors to study as communities. Three generations of Newtonian scholars are captured: ‘the disciples’ (Newton and his contemporaries, 1687-1727), ‘the followers’, 1728-1760) and ‘the second generation Newtonians’ (1761-1822).

The poster explains how Newtonian communities in the two national spheres are connected, but also how they differ from each other, and how other scholarly traditions co-existed with them over time. Besides the quantitative outcomes, I reflect upon the data and outcome als ‘situated knowledge’ (Haraway 1988, Lavin 2021), which prompts us to consider the networks as capturing potential relations rather than unambiguous connections.

Slice	Range	No. publications	No. authors
Disciples	1687-1727	92	55
Followers/1st Gen	1728-1760	55	43
2nd Generation	1761-1822	46	28

Table 1: Time slices summary

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