

This essay compares and contrasts Lynn Thorndike's article *The True Place of Astrology in the History of Science* and Mark Graubard's article *Astrology's Demise and Its Bearing on the Decline and Death of Beliefs*.¹

Lynn Thorndike was a professor of medieval history in the 1940's and Mark Graubard was a professor of natural science in the 1950's. Their articles addressed students of history of science. Graubard's article challenges Thorndike's, which argues that prior to the promulgation of Newton's universal law of gravitation, the universal law was astrological.

Thorndike proposes that astrology should have a place in the history of science. He reasons that, just as the basis of science, after Newton, was the universal law of gravitation; the basis for science, prior to Newton, was the astrological law. This astrological law, that all matters of Earth, as the ones investigated by Aristotle and by astrologers,² also followed their line of reasoning,³ that is, the causation of inferiors by the superiors, which had unique supreme properties.⁴ He suggests that this law permeated thinking up to the seventeenth century, to the extent that it was considered natural – it was a universal law⁵. He lists renown medieval intellects of science who embraced astrological principles, including Tycho Brahe, Kepler, Thomas Aquinas, Roger Bacon, Albert

¹ Lynn Thorndike, 'The True Place of Astrology in the History of Science.' *Isis*, vol. 46, no. 3, (1955), pp. 273–278. *JSTOR*, www.jstor.org/stable/226346 [accessed 15 March 2019]; Mark Graubard, 'Astrology's Demise and Its Bearing on the Decline and Death of Beliefs.' *Osiris*, vol. 13, (1958), pp. 210–261. *JSTOR*, www.jstor.org/stable/301650 [accessed 15 March 2019]

² Aristotle naturalism only provided a rationale for Ptolemy's *Tetrabiblos*, which was the reference for astrological principles at the time. Source: Nicholas Campion, *A History of Western Astrology Vol I The Ancient World*, (Bloomsbury, 2013-2015), pp. 208-211. [accessed 10 March 2019]

³ It is suggested that since Aristotelian logic dominated the medieval world, it was also used by the astrologers, creating a hybrid logic, that is, the causation of things by the superiors justified the application of astrology principles to investigate all matters of nature.

By Aristotle's logic, scientific knowledge is the knowledge of causes. Source: Smith, Robin, 'Aristotle's Logic', *The Stanford Encyclopedia of Philosophy* (Winter 2018 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/win2018/entries/aristotle-logic/>, 6.1 [accessed 6 March 2019]

⁴ Thorndike, pp. 274,276

⁵ *Ibid.*, p. 276

Magnus.⁶ He remarks that although Graubard, on his book *Astrology and Alchemy, Two Fossil Sciences*,⁷ recognized that astrology was not a past superstition but a fossil science, he did not recognize that it was a universal law.⁸ He states that Newton's *Principia*⁹ destroyed the distinction between superiors and inferiors.¹⁰ On his conclusion, he derives from philosopher and physicist Herbert Dingle, two important fundaments of his paper: the scope in which he defines science, or through its object and purpose, and the place of astrology in the history of science, or that it is its genesis.¹¹

On his paper, Graubard responds to Thorndike, and complements it. He acknowledges that astrology was based on natural law¹² but disagrees it as an early scientific law¹³. He provides numerical data to show that astrological publications by astronomers had already started to dwindle around mid-sixteenth century.¹⁴ He defends that the decline of astrology began due to its long-challenged inconsistencies,¹⁵ which were elucidated by the new discoveries introduced by celebrated sixteenth century astronomers Galileo, Copernicus, Tycho Bahe and Kepler, who already showed uncertainly on their astrological believes.¹⁶ He disagrees with Thorndike's account that it was Newton's *Principia* that ended the distinction between the inferiors and superiors.¹⁷ On

⁶ Ibid., p. 274

⁷ Graubard also mentions that astronomy came from the womb of astrology. Source: Mark Graubard, *Astrology and Alchemy Two Fossil Sciences*, (New York, Philosophical Library, 1953), ix.

⁸ Thorndike, p. 276

⁹ Newton's *Principia* first publication was in 1687, Newton tried to demonstrate to philosophers how to employ various mathematical and experimental methods to reach conclusions about nature. Source: Andrew Janiak, 'Newton's Philosophy', The Stanford Encyclopedia of Philosophy (Winter 2016 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/win2016/entries/newton-philosophy/>, 4.0 [accessed 8 March 2019]

¹⁰ Thorndike, p. 277

¹¹ Ibid., p. 277

¹² Graubard, 1958, p. 224

¹³ Ibid., p. 254

¹⁴ Ibid., p. 217

¹⁵ Ibid., pp. 211, 250

¹⁶ Ibid., pp. 217, 220, 241, 247, 253

¹⁷ Ibid., p. 238

his conclusion, he infers that, due to all the new concepts that challenged astrological principles, the fall of astrology was inevitable.¹⁸

Although the articles share a common theme, the relationship between astrology and science, their approach to the subject is disparate. Whereas Thorndike explores the role of astrology in the history of science, Graubard explores the role of science in the history of astrology. Whilst Thorndike's article seeks what is elemental, Graubard's article focuses on the complex. Decisively, the crucial difference between their articles is their cultural frame of reference; Thorndike's is historical and medieval, and Graubard's is scientific and modern.

The greatest strength of Thorndike's article is that it is concise, neutral and precise. In such short article, he indisputably establishes the framework for his point of view,¹⁹ which he corroborates with citations that invite the reader to immerse and to inspect the perspective that was characteristic of the system of medieval logic and beliefs. Except when pointing out the essence of his article to the reader, who may be surprised with such different worldview from ours, he leaves to her/him the interpretation of the historical passages. His biggest weakness is that it is incomplete. Although he states, at the beginning of the article, that his purpose is to emphasize a single point, because he did not elaborate on the significance of Newton's *Principia*, the conceptual connection between medieval astrological science and Newtonian science was impaired.

The greatest strength of Graubard's article is that it is coherent and informative. His article is systematic, and it provides enlighten accounts of astronomer's explorations that preceded Newton.

¹⁸ Ibid., p. 257

¹⁹ The framework of his argument can be seen as a mapping, between astrology and modern science, that is defined by three agents: the investigator, the object of investigation, and the logic used to conduct the investigation. Prior to Newton, the investigator was a branch of astrology, and after Newton, modern science. The object of investigation was the same for both, all matters of Earth, except that astrology utilized Aristotelian/astrological reasoning whereas modern science utilized Newtonian reasoning.

His biggest weakness is that it is ineffective. It is not clear whether he was refuting Thorndike's paper or if he was articulating an independent point of view. If he was refuting Thorndike, he overlooked the context in which Thorndike's argument relates science and astrology. Whichever of two given alternatives is the case, he restricts his argument to astronomers who were astrologers²⁰ and then, he reckons that the decline of astrology began in 1500²¹ by corroborating it with evidence that is based on data that is technically unreliable.²² Furthermore, his conclusions about the role played by astrology on the cultural mindset of astronomers was speculative²³. Graubard's cultural frame of reference is incongruent with the role argued. As the distinguished contemporary historian and astrologer Nicholas Campion points out, astrology, 'exists only within a cultural context'.²⁴ And so does its history.

By omitting numerical data that preceded the sixteenth century, Graubard attempted to validate his hypothesis, that the intellectual decline of astrology among astronomers began with Copernicus. However, he does not consider, for example, the effect of priest Marsilio Ficino's *Platonic Theology* (1482), and other works, on the astrological philosophy;²⁵ it seeded this decline whereas the cabbalist philosopher Pico della Mirandola's *Disputationes* (1490), propelled it.²⁶ Another historical oversight can be found on the fact that the numerical data was extracted from a 1651²⁷

²⁰ The *Tetrabiblos* had already established astrology and astronomy as their own science.

Source: Ptolemy, 'Tetrabiblos',

http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Ptolemy/Tetrabiblos/1A*.html#1, 1. [accessed 2 March 2019]

²¹ Graubard, 1958, p. 217

²² Sampling bias is observed because Graubard claims that both, Sherburne and Ricciolous, were not fond of astrology. Source: Graubard, 1958, pp. 212-213

²³ As an example, Graubard believes Kepler accepts parts of astrology because his personality finds harmony on its principles. Source: Graubard, 1958, p. 240

²⁴ Text from: Liz Greene, 'Is Astrology a Divinatory System?', *Culture and Cosmos*, Vol. 12 no 1, Spring/Summer, pp. 3-29

²⁵ Nicholas Campion, *A History of Western Astrology Vol II The Medieval and Modern Worlds*, (Continuum, 2009), pp. 86-89, 99-101

²⁶ Ibid., pp. 101-104, 132

²⁷ Graubard, 1958, p. 258

publication by Italian astronomer-priest Ricciolous, and it had been a while since the Italian Inquisition had started to scrutinize dissident publications.²⁸ Surely, the new discoveries were not only revolutionizing, but also threatening. And, as said by internationally respected astrologer and author Alexander Ruperti ‘The need to feel secure by seeing order in existence is man's basic need’.²⁹ That said, those were uncertain times, for astrology and for astronomy, for natural philosophies as well as for the church.

Conceptual cultural differences constitute the hallmark of Graubard divergence from Thorndike. Graubard regards as scientific, the phenomena, that is mechanistic, quantitative and demonstrates, as Newton proposed. Moreover, Graubard’s argument suggests that Newton’s method is a law because it establishes the principles of movement and attraction, that Newton’s law is universal because gravitation is universal.³⁰ There are no animated actors. His view contradicts Thorndike’s application of Dingle’s proposal. Indeed, culture is a sort of premature utopia.³¹

Conversely, because Thorndike does not discuss Newton’s law, he seems to assume that it would be understood in a manner that is equivalent to how he depicts his astrological law. Despite this, he implies that, within the medieval mind cultural frame of reference and as idealized by him, Newton’s law is scientific because it detected, our experience of being where we are and a relationship between celestial bodies and us, and expressed them in a rational form;³² it is a law because the scientific inquiry must be justified through the methods of Newton; it is universal

²⁸ Paula Findlen, and Marcus Hannah, ‘Science under Inquisition: Heresy and Knowledge in Catholic Reformation Rome.’, *Isis*, vol. 103, no. 2, (2012), pp. 376–382, *JSTOR*, www.jstor.org/stable/10.1086/666367, p. 379. [accessed 10 March 2019]

²⁹ Alexander Ruperti, ‘Dane Rudhyar—March 23, 1895 – September 13, 1985—A Seed-Man for the New Era’, accessnewage.com, originally printed in *Astrological Journal* Vol. 33 no 2 (Spring 1986), p. 55. See also <http://accessnewage.com/articles/astro/rud8.htm>. [accessed 10 March 2019]

³⁰ Graubard, 1958, pp. 226-226

³¹ Terry Eagleton, *The Idea of Culture*, (Blackwell, 2000), p.7

³² Thorndike, p.227

because all matters of earth are investigated using Newton's method, and because his method became ubiquitous among scientists and intellectuals.³³ In fact, due to the elegance and coherence of Newton's expose, various eighteenth-century philosophers as well as non-philosophers, attempted to appropriate the 'Newtonian mind'. Clearly, Thorndike accounts of medieval thought have the same characteristics of what could have been called the astrological mind. However, Thorndike's analogy between Newton's law and astrological law does not automatically follow from his assumption.

Likewise, Thorndike does not clarify why he saw Newton's *Principia* as the agent of destruction of the distinction between the superior and inferiors.³⁴ Graubard disagrees because the gravitation law was not like a binding cement between inferiors and superiors.³⁵ Nonetheless, Thorndike's article is so elemental that it hints to how the pre-Newtonian mind, still imbued by the prevalence of inductive reasoning, might have seen the advent of Newton's *Principia* – the causation of things does not come from the thing, it comes from a new force that can be proven rationally.³⁶ Although the effects of Newton's *Principia* might have taken some time to attain universality,³⁷ for human beings in general, quick to grasp the gist of their survival in all the dimensions of culture, the understanding of its complexities is unnecessary.

Interestingly, Graubard comments that Thorndike's books demonstrate that 'reason is a dubious force in changing deep-rooted beliefs, especially those that are basically irrelevant to an immediate and practical issue'.³⁸ Then, why does it matter if the astronomical model is heliocentric if when

³³ Janiak, 1.

³⁴ Thorndike, p. 277

³⁵ Graubard, 1958, p. 224

³⁶ By Aristotelian logic, '...exactly one member of any contradiction is true and one false: they cannot both be true, and they cannot both be false.' By inductive syllogism, it goes from the particular to universal.

Source: Janiak, 4.2

³⁷ Ibid.

³⁸ Graubard, 1958, p. 211

we open our eyes, we see the sun revolving around earth? It likely mattered for some astronomers, but to what extent, it is unclear; after all, Kepler was content in finding a mathematical explanation for the existence of his celestial clock in the sun.³⁹ Without question, Newton's impact seems to have been the deepest.

Ironically, contemporary scientists remain in desperate search for the graviton of gravity. Then again, we may follow our history and dismiss the graviton like we did the ether. Notwithstanding our choices, as long as we are true to objective of science, as delivered to us by Thorndike, we will always search upon the stars, for a new and greater concept, body, force, particle, dimension, system, that will finally clarify to us if we are really the rulers of life.

³⁹ Graubard, 1958, p. 226

Bibliography

Campion, Campion, *A History of Western Astrology Vol II The Medieval and Modern Worlds*, (Continuum, 2009)

-*A History of Western Astrology Vol I The Ancient World*, (Bloomsbury, 2013-2015)

Graubard, Mark, 'Astrology's Demise and Its Bearing on the Decline and Death of Beliefs.' *Osiris*, vol. 13, (1958), pp. 210–261. *JSTOR*, www.jstor.org/stable/301650 [accessed 15 March 2019]

-*Astrology and Alchemy, Two Fossil Sciences*, (New York, Philosophical Library, 1953)

Ptolemy, 'Tetrabiblos',

http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Ptolemy/Tetrabiblos/1A*.html#1, 1.

[accessed 2 March 2019]

Thorndike, Lynn, 'The True Place of Astrology in the History of Science.' *Isis*, vol. 46, no. 3, (1955), pp. 273–278. *JSTOR*, www.jstor.org/stable/226346 [accessed 15 March 2019]

References

Boner, Patrick J, et al. *Renaissance Quarterly*, vol. 59, no. 1, 2006, pp. 222–224. *JSTOR*, www.jstor.org/stable/10.1353/ren.2008.0133. [accessed 15 March 2019]

Brosseder, Claudia. 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany.' *Journal of the History of Ideas*, vol. 66, no. 4, 2005, pp. 557–576. *JSTOR*, www.jstor.org/stable/3654348. [accessed 15 March 2019]

Eagleton, Terry, *The Idea of Culture*, (Blackwell, 2000), p.7

Janiak, Andrew, 'Newton's Philosophy', *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/win2016/entries/newton-philosophy/>, 4.0 [accessed 8 March 2019]

Ruperti, Alexander, 'Dane Rudhyar—March 23, 1895 – September 13, 1985—A Seed-Man for the New Era', accessnewage.com, originally printed in *Astrological Journal* Vol. 33 no 2 (Spring 1986), p. 55. See also <http://accessnewage.com/articles/astro/rud8.htm>. [accessed 10 March 2019]

North, J. D. *Isis*, vol. 82, no. 2, 1991, pp. 373–374. *JSTOR*, www.jstor.org/stable/234878. [accessed 13 March 2019]

Findlen, Paula, and Hannah Marcus, 'Science under Inquisition: Heresy and Knowledge in Catholic Reformation Rome.', *Isis*, vol. 103, no. 2, (2012), pp. 376–382, *JSTOR*, www.jstor.org/stable/10.1086/666367 [accessed 9 March 2019]

Greene, Liz, 'Is Astrology a Divinatory System?', *Culture and Cosmos*, Vol. 12 no 1, Spring/Summer, pp. 3-29

Smith, Robin, 'Aristotle's Logic', *The Stanford Encyclopedia of Philosophy* (Winter 2018 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/win2018/entries/aristotle-logic/>, 6.1 [accessed 6 March 2019]

Schwartz, Hillel, *The American Historical Review*, vol. 96, no. 2, 1991, pp. 504–505. *JSTOR*, www.jstor.org/stable/2163265. [accessed 13 March 2019]

Wright, Peter, 'Astrology and Science in Seventeenth-Century England.' *Social Studies of Science*, vol. 5, no. 4, 1975, pp. 399–422. *JSTOR*, www.jstor.org/stable/284805. [accessed 10 March 2019]