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Module code: HPCA7015 Module title: Foundations in Cultural Astronomy and Astrology	Student ID number: 2219166	Educational support needs: No
Assignment title: A 3,500 word essay written on a topic within the subject area (Topic E)		
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This assignment is for the module of the degree 1 st ☒ 2 nd ☐ 3 rd ☐ 4 th ☐ 5 th ☐ 6 th ☐		
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E- Using one or more examples referenced in secondary sources, critically examine the cultural consequences or adaptation of, the use of, or belief in, the significance of astronomical cycles

Word Count: 3666/3500 words

Introduction

Throughout history, astrology has been the subject of criticism and polemics, as summarized by, e.g., Bernulf Kanitscheider¹. However, many scholars have suggested a specific turning point for astrology at the time of Galileo and Copernicus. For instance, in his 1973 article aiming at demonstrating that 'there can be no scientific validity in the methods and predictions of astrology'², Lawrence Jerome found that 'With the invention of the telescope by Galileo and the overthrow of the Ptolemaic geocentric universe by Copernicus, astrology began to lose followers'³. Previously, Gibson Reaves had taken a similar approach, when writing that 'As far as *science* is concerned, astrology, which died in the middle of the 17th century, remains dead. As a *faith*, it is still alive'⁴. The position that astrology is unscientific has been the majority view in society at large as well, at least since the 1980s, see Figure 1. Yet within this context, astrology persisted over the centuries. To explain this, for Kanitscheider 'Sceptical arguments impress only a few intellectuals, whereas the motivating force behind astrology has always been a person's need to deal with life'⁵ and likewise for Dean et al. 'clients of astrologers see astrology as a source of meaning and spiritual benefit, not as a source of truth'⁶. In 2021, there was a significant surge in astrological consultations, a multi-billion-dollar industry on which the BBC reported by notably addressing the factor of social media, as well as anxieties fuelled by the pandemic⁷. This revival of astrological beliefs and practices, in particular a resurgence through contemporary means of interaction, can only be explained through a certain relevance of astrology to members of our society. Still, considering the successful efforts of science communicators and educators to inform the general public, especially the young generation, about the advancements in astronomy⁸, up-to-date scientific knowledge has to be addressed by contemporary astrology to keep its believability for clients.

With these initial considerations in mind, this essay first describes some astronomical cycles that were discovered thanks to telescopic astronomy. Then, the significance attributed to selected sets of these 'new' astronomical cycles by practicing astrologers is explored, and the broader consequences that these discoveries had on the astrology community are examined. Throughout the essay, notions of modernity and post-modernism will provide a theoretical framework for the discussion, to support the conclusion that astrology has to evolve alongside astronomy to be relevant to the contemporary society and substantiate the claim that at present, it lives on as a post-modern, therapeutic practice.

¹ Bernulf Kanitscheider, 'A Philosopher looks at Astrology', *Interdisciplinary Science Reviews*, 16.3 (1991), 258-266 (p. 258)

² Lawrence Jerome, 'Astrology and Modern Science: A Critical Analysis', *Leonardo*, 6:2 (1973), 121-130 (p. 121)

³ Jerome, 'Astrology and Modern Science', p. 124

⁴ Gibson Reaves, 'The Rise and Fall of Astrology', *Astronomical Society of the Pacific Leaflets*, 10:480 (1967), 233-240 (p. 240)

⁵ Kanitscheider, 'A Philosopher looks at Astrology', p. 258

⁶ Geoffrey Dean, Don Saklofske and Ivan Kelly, 'Astrology as a Spiritual Belief System: Why a Focus on Empirical Evidence and Objective Truth May be Missing the Point', *Skeptic*, 26:2 (2021), pp. 30+

⁷ BBC, 'The anxieties and apps fuelling the astrology boom', *BBC Worklife*, (2021)

⁸ See e.g., Anthony Lelliott and Marissa Rollnick, 'Big Ideas: A review of astronomy education research 1974-2008', *International Journal of Science Education*, 32:13 (2010), 1771-1799

Cycles in the age of modern astronomy

Multiple authors, especially physicists, have alternatively referred to the historical period often called the Copernican revolution, which roughly started with Copernicus' publication of *On the Revolutions of the Heavenly Spheres* in 1543 and lasted until Galileo Galilei's development of the telescope in 1609, as the 'birth of modern astronomy'⁹. Harland Bloland is an example of a scholar who holds that modern is an 'imprecise and highly contested'¹⁰ concept. Still, he highlights the importance of the scientific method. In James Conant's analysis of Modernism, the emphasis is likewise on a 'curious interplay between [...] theoretical notions and the experimentation'¹¹. The suitability to the start of telescopic astronomy is as follows: thanks to methodical experimentation, i.e., looking through his scope and scrupulously recoding his observations, Galileo was able to establish the presence of objects that were previously not visible. This is of course due to their magnitudes being lower than what can be seen with the naked eye, which had been the impassable limitation both for astronomy and astrology¹².

Among Galileo's discoveries were the Jovian moons Io, Europe, Calisto and Ganymede: they were evidently orbiting another planet, an observation of which it would go beyond the scope of this essay to expose the repercussions; for now, suffices to say that Galileo discerned a whole new type of celestial objects. However, possibly the most staggering revelations for astronomers were those of 'additional' planets in our solar system, once the telescopes were developed enough: Uranus was spotted in 1781¹³, Neptune in 1846¹⁴, and Pluto in 1930¹⁵ before its reclassification as a dwarf planet in 2006¹⁶. Although not directly due to the Plutonian cycle, one should underline that the process of reclassification itself had cultural consequences¹⁷. Anyway, it is symptomatic of a greater struggle faced by modern astronomers, which is that of categorizing¹⁸, more than just a handful of moons, but the millions of objects in our solar system discovered thanks to growingly more powerful instruments¹⁹. For instance, Figure 2 reveals the number of detected asteroids, over time. Each of these innumerable objects is characterized by properties like its shape, mass, distance from the Sun, and orbital period, which is of course a cycle in itself – 84 (Earth) years for Uranus, 165 years for Neptune, etc.

⁹ Owen Gingerich, 'Galileo, the Impact of the Telescope, and the Birth of Modern Astronomy', *Proceedings of the American Philosophical Society*, 155:2 (2011), 134-141; and Hannes Alfvén and Carl-Gunne Fälthammar, 'Astrophysics in a Nutshell – from the Telescope to the Sputnik', *ESA - Proceedings of an International School and Workshop on Plasma Astrophysics*, 1 (1988), 3-8

¹⁰ Harland Bloland, 'Postmodernism and Higher Education', *The Journal of Higher Education*, 66:5 (1995), 521-559 (p. 523)

¹¹ James Conant, 'Science and Technology in the Last Decade', in *Modern Science and Modern Man* (Bampton Lectures in America, Columbia University Press, 1952), 1-30 (p. 26)

¹² William Donahue, 'The instrument that revolutionized astronomy before the telescope', *Nature Astronomy*, 4 (2020), 111-112

¹³ Helen Sawyer Hogg, 'Out of Old Books (The Recognition of Uranus as a Planet)', *Journal of the Royal Astronomical Society of Canada*, 45 (1951), 255-261

¹⁴ William Smart, 'John Couch Adams and the discovery of Neptune', *Popular Astronomy*, 55 (1947), 301-311

¹⁵ William Pickering, 'The Discovery of Pluto', *Monthly Notices of the Royal Astronomical Society*, 91 (1931), 812-817

¹⁶ Iwan Williams and Jocelyn Bell, 'What it takes to make a Planet', *Astronomy & Geophysics*, 47:5 (2006), pp. 16+

¹⁷ Suzanne Broughton, Gale Sinatra and Michael Nussbaum, '"Pluto Has Been a Planet My Whole Life!" Emotions, Attitudes, and Conceptual Change in Elementary Students' Learning about Pluto's Reclassification', *Research in Science Education*, 43 (2013), 529-550

¹⁸ See e.g., Zoran Knežević, 'Asteroid Family Identification: History and State of the Art', *Proceedings IAU Symposium*, 318 (2015), 16-27

¹⁹ Tilman Spohn, 'Small Solar System Body', in *Encyclopedia of Astrobiology* (Springer, 2011), 1516-1517

From a terrestrial perspective, this implies an equal number of ‘new’ cycles. Nicholas DeVore provides a comprehensive definition of *cycle* in his *Encyclopedia of Astrology*: ‘When a faster moving planet overtakes and passes a slower moving planet, it forms a conjunction. When this recurs a second time between the same two planets there is evident a first step in a cyclic effect, wherein the second conjunction has occurred after a certain interval of time’²⁰. The nomenclature for planetary configurations is applicable to asteroidal configurations as well²¹. Nowadays, it is easy to have access online to charts with the dates at which planets and the brightest asteroids have been calculated to be at these positions along their orbit²².

What’s more, although still limiting the display of new cycles in this essay to planet-like objects, in 1995 the increasingly powerful telescopes enabled Didier Queloz and Michel Mayor to detect the first planet outside our solar system, an exoplanet²³. Figure 3 shows that of the more than 5000 exoplanets discovered to date, the majority were found through the transit method²⁴ which takes advantage of a different type of cycle to the traditional one described by DeVore, namely, the periodic dimming of light from a star as its planet passes ‘in front of’ it, from a terrestrial perspective. Adding to this, astronomers have since determined the presence of moons in these exoplanetary systems²⁵ – and, very recently, that of exoplanets in other galaxies²⁶.

Astrophysicists thus study a plethora of astronomical cycles, within and outside of the solar system, thanks to the presently available technology. Besides these discoveries having a great impact on popular culture, particularly stimulating the imagination of creators of science-fiction works²⁷, they also ‘forced astrologers to rethink their rationale concerning the incorporation and interpretation of such additional planetary bodies’²⁸, as Demetra George explains. Another astrologer, John Hawkins, makes explicit the reason for this, namely the standard accepted by many practitioners that ‘the power of planets comes not from size or distance from the sun’²⁹. Possible uses of additional planetary bodies, and their associated cycles, in astrology, are presented next.

²⁰ Nicholas DeVore, ‘Cycles’, in *Encyclopedia of Astrology* (Astrology Center of America, 2005), 74

²¹ New Mexico State University Department of Astronomy, ‘Planetary Configurations’, 1-2 (p. 1)

²² See e.g., the website <http://astro.vanbuitenen.nl/asteroids>

²³ Michel Mayor and Didier Queloz, ‘A Jupiter-Mass Companion to a Solar-Type Star’, *Nature*, 378:6555 (1995), pp. 355+

²⁴ Aude Alapini Odunlade, ‘Introduction’, in *Transiting exoplanets: characterisation in the presence of stellar activity*, (2010), 1-29 (p. 3)

²⁵ Alex Teachey and David Kipping, ‘Evidence for a large exomoon orbiting Kepler-1625b’, *Sciences Advances*, 4:10 (2018), 1-9

²⁶ Rosanne DiStefano et al., ‘M51-ULS-1b: The First Candidate for a Planet in an External Galaxy’, *arXiv*, (2020) [preprint]

²⁷ Guy Consolmagno, ‘Astronomy, Science Fiction and Popular Culture: 1277 to 2001 (and Beyond)’, *Leonardo*, 22:2 (1996), 127-132

²⁸ Demetra George, ‘Asteroids and Mythic Astrology’, (2010), 1-6 (p. 1)

²⁹ John Hawkins, ‘Foreword’, in *Asteroids in the Birth Chart*, (American Federation of Astrology, 2000), vii-xvi (p. xvi)

The integration of 'new' astronomical cycles into astrological practices

The contested notion of 'modernity' was already evoked regarding astronomy. Even more so than for astronomy, where only a minority of scholars would describe specific branches of astronomy as having become post-modern³⁰ (incidentally, a word equally imprecise as *modern* for Bloland), the periodization of astrology is an ongoing subject of discussion. Whether one is a proponent of the theory that astrology is part of 'late modernity'³¹ as suggested by John Bauer and Martin Durant, that it has become 'for lack of a better term – post-modern astrology'³² as Robert Hand puts it, or has even developed into a 'new, postmodern, astro-psychology'³³, one that integrates astrology with contemporary psychology to be an aid for personal development, as Glenn Perry would argue, it is undeniable that astrology has evolved over the centuries of its practice. Patrick Curry asserts that 'one of the lessons of the history of astrology is that almost nothing human ever really dies and disappears; it [...] continues (albeit changed),'³⁴. Notably, as is addressed in this section through three examples, astrology 'continues albeit changed' alongside scientific discoveries.

The first case is the historical one of the integrations of Uranus and Neptune to the astronomical definition of the solar system, and how this process was echoed by astrologers. Specific to Western astrology, Richard Tarnas' chapter on the outer planets' conjunction series begins with 'Uranus, Neptune, and Pluto are currently the only celestial bodies in our solar system discovered in the modern era for which we have virtually universal consensus in the contemporary astrological research community concerning their archetypal significance'³⁵. So, beliefs about their power over human activity have become associated with the cycles of the outer planets. Continuing with Tarnas, he relates specific conjunctions and links them to historical events, e.g., the 'Uranus-Neptune conjunction of the 1985 – 2001 period'³⁶ and the Cold War through the archetypal character 'revolution by dissolution'³⁷ that is, according to his school of thought, characteristic of this conjunction, although he does not reflect on previous iterations of this planetary cycle. Either way, the idea of consensus that Tarnas presents fades in the face of other cultures. Paul Carus, an influential figure in the introduction of Buddhism to the West, highlights that in the Buddhist perspective, the establishing of the existence of 7 planets is convenient in that 'Happily for the number seven two new planets, Uranus and Neptune, were discovered in due time when, owing to a change of our astronomical science and its terminology, the sun and the moon ceased to be regarded as planets. [...] The number seven plays an important part in Buddhist folklore. There are seven kinds of miraculous property [...] endowed with magical qualities'³⁸, though not much more is discussed about way in which the replacement occurred, since the durations of the planets' orbits obviously differs from the Sun's and the Moon's. An example, where however the orbit is given centre stage, is where in a report on African-American poet Margaret Walker's life, Seretha Williams notably quotes her on 'Neptune going into 5th on Scorpio emphasizes children and education'³⁹ and 'in two years Neptune moves into Sagittarius where it affects the national labour and health'⁴⁰. Importantly, Williams also quotes

³⁰ See e.g., Jerome Drexler, 'Discovering Postmodern Cosmology', (Universal Publishers, 2008)

³¹ John Bauer and Martin Durant, 'British Public Perceptions of Astrology: An Approach from the Sociology of Knowledge', *Culture and Cosmos*, 1:1 (1997), 69

³² Robert Hand, 'Towards a Post-Modern Astrology', (2006)

³³ Glenn Perry, 'The New Paradigm and Postmodern Astrology', *Proceedings of the International Forum on New Science*, (1991)

³⁴ Patrick Curry, 'Astrology: From Pagan to Postmodern?', *The Astrological Journal*, 36:1 (1994), 69-75 (p. 74)

³⁵ Richard Tarnas, 'World Transits 2000-2020: An Overview', *Archai*, 2 (2010), 147-212 (p. 148)

³⁶ Tarnas, 'World Transits', p. 150

³⁷ Tarnas, 'World Transits', p. 150

³⁸ Paul Carus, 'Seven', *The Open Court*, 7 (1901), 412-427 (p. 412-413)

³⁹ Seretha Williams, '"Neptune is truly the ruler of the Negro Race": Margaret Walker, Horoscopes, and a Black Future', *Journal of Ethnic American Literature*, 7 (2017), 47-62 (p. 54)

⁴⁰ Williams, 'Margaret Walker, Horoscopes, and a Black Future', p. 60

Walker's declaration 'Neptune is truly the ruler of the [black people]' ⁴¹, so that the poet understood Neptune's position along its cycle, appearing in a certain constellation, as a way to prepare for situations that the African-American population might face collectively during those years. Altogether, this calls attention to the fact that the consensus may not be as strong as Tarnas imagined on the astrological attributes and meaning of Uranus and Neptune, although the planets, or their cycle, did get 'absorbed' into many practices of astrology.

George and Bloch describe that 'the discovery of each new outer body indicated that humanity was ready to activate and integrate the archetypal principle inherent in the mythology of that planet' ⁴² and extends this notion to asteroids. Specifically, they consider the asteroids Ceres, Pallas Athene, Juno and Vesta as symbols of femininity due to them being named after Greek Goddesses, but also as representative of the role of these goddesses. Concrete applications based on their seminal work include Gary Caton's suggestions that 'Vesta [goddess of the sacred flame] has the tightest orbit, [...] she symbolizes the first step of the transformational process' ⁴³, or that 'Juno [goddess of women and marriage] has an extremely eccentric or elliptical orbit; this means that she crosses the orbits of the other asteroids, which suits her role as maker of connections' ⁴⁴. Therefore, as before the location along the orbit is appreciated as potentially being influential on terrestrial bearings. Moreover, associating this position to those of other celestial objects results in another set of periodic alignments from a terrestrial perspective, with influence on human activity potentially associated with it: George and Bloch, due to the location of the asteroid Main Belt between Mars and Jupiter, indeed propose to see them as a 'spiritual bridge' ⁴⁵ between the inner, terrestrial planets and the gas giants. A key issue with the mythic approach is that only a minority of asteroids are named after mythological women ⁴⁶. Yet, to date, there has been no justification for choosing certain asteroids over others (particularly in light of Hawkins' standard), nor has another astrological framework to interpret asteroids' cycles been proposed. Individuals like Rita Bremer have attempted to explain correlations between asteroid occultations (their transit in front of a background star) and political happenings ⁴⁷, but again this practice does not seem to have been systematized. As a consequence, considering the number of daily occultations, the lack of significance attributed to the majority of the asteroids, individually, and Hawkins' standard, asteroids could indeed be arbitrarily used to explain a multitude of what Bremer calls 'mundane highlights' ⁴⁸. Anyway, this shows that some astrologers have wrestled with the idea of including the ever-growing number of asteroids, although this practice remains much less widespread than that of including the outer planets and is even dependent on the individual practitioner rather than on a given culture.

An even more minority view is one where Kuiper Belt objects (KBOs) are part of the astrological system. In her thesis for the fulfilment of the requirements for a Master's degree in Psychology, Sally Hildreth unlocks the door for 'An ecological astrology, grounded in the earth, [which] should hold space for the sky as we are aware of it in the here and now. To stay true to the connection between earth and sky is to hold space for the Kuiper belt' ⁴⁹. Parts of her argument includes the long timescales of the cycles of KBOs, which typically revolve around the sun in a few centuries or millennia.

⁴¹ Williams, 'Margaret Walker, Horoscopes, and a Black Future', p. 50

⁴² Demetra George and Douglas Bloch, 'The Asteroids – Agents of Transformation: The Asteroids and Cultural Transformation', in *Asteroid Goddesses: The Mythology, Psychology, and Astrology of the Re-Emerging Feminine*, (Nicolas-Hays, Inc., 2003), ch. 1.1

⁴³ Gary Caton, 'Goddess Astrology Re-Visioned: Transformation via the Sacred Feminine', *The Mountain Astrologer*, (2009), 46-53 (p.49)

⁴⁴ Caton, 'Goddess Astrology Re-Visioned', p. 49

⁴⁵ George and Bloch, 'The Asteroids as Agents of Personal Transformation', in *Asteroid Goddesses*, ch. 1.3

⁴⁶ See e.g., the IAU's list of asteroids at <https://www.minorplanetcenter.net/iau/lists/MPNames.html>

⁴⁷ Rita Bremer, 'Challenged by Asteroids!', *The Mutable Dilemma*, 7:4 (1984)

⁴⁸ Bremer, 'Challenged by Asteroids!'

⁴⁹ Sally Hildreth, 'Deep Ecology and Western Astrology: The Kuiper Belt and Cosmological Mystery', *University of West Georgia ProQuest Dissertations Publishing*, (2017), 1-89 (p. 49)

She asks: 'how does one dialogue with time/space that exceeds multiple human lifetimes?' ⁵⁰ and resolves her own question with a concept of malleable time, whereby 'one discovery in the present can change the meaning of the past' ⁵¹. Much like in the case of asteroids though, there is no system yet to appreciate each KBO's potential impact from the astrological significance it may hold.

With these three examples, we can see that overall, some astrologers have responded to discoveries of modern astronomy by incorporating newly discovered constituents of our solar system and assigning properties to them. However, practitioners themselves have acknowledged the limitations of a system where 'size of an astronomical body is unrelated to astrological effectiveness' ⁵², e.g., Hand expressing a problem of complexity: 'the disaster is that there are thousands of asteroids and other minor bodies orbiting the sun, and using present-day astrological techniques there is no way of accounting for all of them in a chart' ⁵³. Under these conditions, any predictive nature of astrology appears severely compromised; following Hildreth's proposition would actually lead to an astrology that retroactively explains events. Furthermore, as critics of astrology like Ivan Kelly have pointed out, 'other astrologers use hypothetical planets such as Vulcan that have not been detected' ⁵⁴; he adds that 'ad hoc hypotheses' are 'escape routes' ⁵⁵ to allow astrology to survive. Still, for a post-modern reader, the evolution of and diversity of practices within astrology is not an issue, rather it is a feature of pluralism. This approach is described by Charles Jencks as 'the idea that the architect must design [...] for differing views of the good life' ⁵⁶. It can easily be applied to astrologers 'designing' their charts, consultations, etc., as appropriate for their clients, for instance based on the celestial object that suits the client's ethnicity or gender. Of course, plurality within astrology already comes from the specificities of the cultures within which it is practiced, as accentuated earlier; it is one of the numerous other factors in the 'continuation albeit changed' of astrology.

Tarnas, again, provides a good summary of the argument so far: 'We are, of course, living in a time when new celestial bodies at the outskirts of our solar system are being discovered at a rapid pace, as are extrasolar planets [...] they represent a peculiarly apt astronomical development for our postmodern age, with its pervading awareness of the complex multiplicity and fluid indeterminacy of reality and the radically interpretive, provisional nature of our knowledge' ⁵⁷. Correspondingly, astrologers and psychologists are working to define such a fluid 'Astrology as a therapeutic tool' ⁵⁸ that fits their client, which would best fit with Perry's Astro-psychology introduced earlier. In turn, this implies that a post-modern model of therapeutic astrology can be relevant for society, as also resolved by Kanitscheider: 'If astrology became a life supporting activity, dispensing reasonable advice on conduct, and if it recognized itself as a kind of practical wisdom derived only in name and through history from stars and planets, then the way would be open for peaceful coexistence between astrology and astronomy' ⁵⁹.

⁵⁰ Hildreth, 'Deep Ecology and Western Astrology', p. 55

⁵¹ Hildreth, 'Deep Ecology and Western Astrology', p. 61

⁵² Ivan Kelly, 'Modern Astrology: A Critique', *Psychological Reports*, 81:3 (1997), 1035-1074 (p. 1045)

⁵³ Robert Hand, *Horoscope Symbols* (Para Research, 1981), p. 93

⁵⁴ Kelly, 'Modern Astrology: A Critique', p. 1045

⁵⁵ Kelly, 'Why Astrology doesn't work', *Psychological Reports*, 82:2 (1998), 355-702 (p. 355)

⁵⁶ Charles Jencks, 'Postmodern and Late Modern: The Essential Definitions', *Chicago Review*, 35:4 (1987), 31-58 (p. 37)

⁵⁷ Tarnas, 'World Transits', p. 1-2

⁵⁸ See e.g., Aleix Mercadé, 'Astrology as a therapeutic tool: A study of a complicated grief case', *37th Iberian Congress of Astrology*, (2022), 1-22

⁵⁹ Kanitscheider, 'A Philosopher looks at Astrology', p. 266

Remaining considerations for the astrology community

The preceding section explored the profound ‘culture shift’ within astrology towards a therapeutic astrology where the practitioner may choose to include the cycles of ‘new’ solar system bodies’ cycles where appropriate to fit a client’s reality. Although it may be possible to include exoplanets into this therapeutic astrology just like the asteroids, the only paper on the matter, by (at the time) PhD student Michael Lund in 2016, indeed starts with: ‘One additional realm that hasn’t been adequately considered, however, is that this large increase in exoplanets would also impact claims regarding astrology’ ⁶⁰.

Rather than considering the exoplanets’ transit cycles, in his analysis Lund discusses the distribution of the exoplanets along the ecliptic and ultimately concludes that it ‘correlates with observed sociological trends in the last 2 decades’ ⁶¹. Problematically, if this correlation is interpreted as causation, the door is re-opened for a predictive astrology. Nevertheless, Lund’s dataset is limited by the number of known exoplanets; moreover, if asteroids are to be considered, and exoplanets are to be considered, would the cycles of the moons of these exoplanets and the asteroids in their systems need to be considered too to, e.g., construct a birth chart? And under Hawkins’ premise, what about the other trillions of galaxies and the planetary cycles therein, and cycles of other celestial objects like pulsars ⁶²? As astronomers receive more and more signals through their instruments, so does the task of the astrologer get exponentially more difficult under Hand’s problem of complexity. Despite having evolved to include more solar system objects, the astrology community has to date not really responded to the many other patterns discovered by contemporary astronomers; still under Hawkins’ criterion, choosing the traditional, solar-system based model appears arbitrary.

Conversely, a few astronomers have asked which are the ‘Past, present and future stars that can see Earth as a transiting exoplanet’ ⁶³; again, the concept was adopted by astrologers such as Ray Grasse, who in 2020 wrote an informal article entitled ‘Exo-Astrology - Or, How Would We Construct Horoscopes on Other Planets?’ ⁶⁴. While this is speculative for now, the National Aeronautics and Space Administration’s Artemis programme is in progress, with the prospect of returning humans to the Moon in preparation of permanent bases on Earth’s natural satellite, and even missions to Mars. Therefore, Grasse is, for one, re-establishing the Earth as the main influence on all ‘Earthling’s’ lives (as ‘the context for all of our celestial interpretations’ ⁶⁵), and on the other, posing more pressing questions for the resilience of astrology in the age of space exploration.

Telescopic astronomy increasingly provides humanity with an understanding of the complex celestial environments within which we live. Considering all the periodic phenomena in the sky that can nowadays be observed, and speculatively, those humanity would experience under new skies, the choice of cycles for astrological interpretation becomes as significant as the cycle itself, as that is what can keep a form of post-modern astrology where it acts as a therapeutic tool relevant. Nonetheless, the astrology community has been slow to adapt to these most recent developments, mostly to address the need to justify the choice of cycles.

⁶⁰ Michael Lund, ‘Astrology in the Era of Exoplanets’, *Acta Prima Aprilia*, 2 (2016), 1-5 (p. 1)

⁶¹ Lund, ‘Astrology in the Era of Exoplanets’, p. 5

⁶² See e.g., Rolf Buehler and Roger Blandford, ‘The surprising Crab pulsar and its nebula: A review’, *Reports on Progress in Physics*, 77:6 (2014), 1-31 (p. 3-4)

⁶³ Lisa Kaltenegger and Jackie Faherty, ‘Past, present and future stars that can see Earth as a transiting exoplanet’, *Nature*, 594 (2021), 505-507

⁶⁴ Ray Grasse, ‘The Challenge of Exo-Astrology - Or, How Would We Construct Horoscopes on Other Planets?’, (2020)

⁶⁵ Grasse, ‘The Challenge of Exo-Astrology’

Conclusion

In summary, the birth of modern astronomy was notably driven by the developments of instrumentation, and telescopes have revealed a multitude of astronomical cycles over the past four centuries. This includes what are traditionally considered cycles in astrology with the 'additional' planets and asteroids of our solar system, and those of a previously unknown nature with exoplanetary transits. Due to the criterion explicated by, among others, Hawkins, their discovery challenged astrologers. Therefore, to varying degrees, practitioners have attempted to integrate these cycles into their practice, as illustrated with the three examples of the outer planets, asteroids, and KBOs: in the first two cases, culture-dependent principles were assigned to the celestial bodies so that their place along the cycle had a particular meaning. More broadly, with this multiplicity of interpretations and in the face of Hand's problem of complexity, astrology underwent a shift towards a post-modern, pluralistic astrology that serves a therapeutic purpose, as encouraged by Perry and Kanitscheider. Under this evaluation, astrology can serve to make sense of a person's past or of 'mundane highlights', and may include ecological principles as proposed by Hildreth in connection to KBOs. Additionally, this therapeutic tool could in the future allow for exo-astrology, for which a space-faring human race would develop new behaviours and beliefs associated with the relevant cycles, although many questions are left in the domain of the interpretation of cycles from outside the solar system, potentially even including non-planetary astronomical objects' cycles.

To conclude, one can also return to Reave's definition of astrology as a faith and Dean's explanation as it being spiritually beneficial, claims which to be justified would require further studies into the efficacy of astrological counselling compared to other forms of therapy, or whether it is 'blaming the stars for evils' ⁶⁶ as the Hellenistic philosopher Plotinus already criticised, an idea retaken by contemporary commentators ⁶⁷. It also raises the question of whether a post-modern astro-psychology fits the criteria of a religion/spirituality more than that of psychological support. Whatever the case may be, by following the evolution of astronomy and integrating new celestial cycles into its practice, astrology has undergone a deeper transformation, one that led it to become a post-modern tool for therapy.

⁶⁶ Peter Adamson, 'Plotinus on Astrology', *Oxford Studies in Ancient Philosophy*, 35 (2008), 265 - 279 (p. 276)

⁶⁷ See e.g., Ivan Kelly, 'Why Astrology doesn't work', p. 355-702, Alex Mazzaferro, 'Stop blaming astrology for your problems', for *The Crimson White – Opinions*, (2018) and Kirsten Kling, 'No, Your Astrological Sign Isn't Why You're Garbage', for *The Bold Italic* (2020)

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Figures

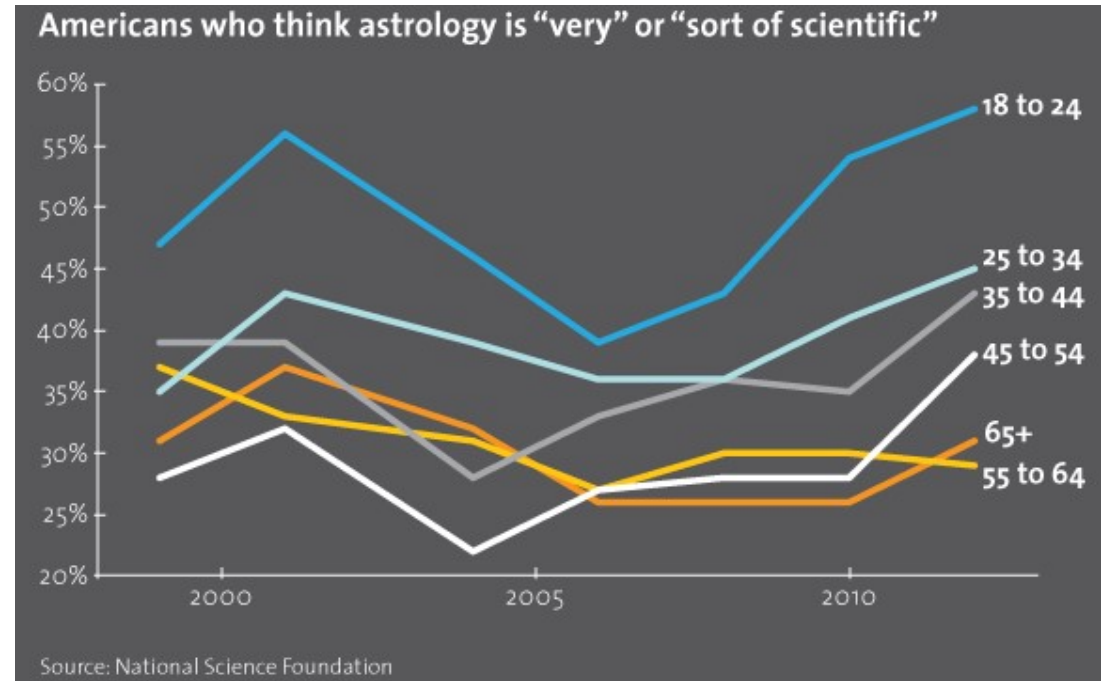


Figure 1 : The position that astrology is unscientific has been majoritarian in Western society, although the last few years have seen an upward trend in society’s interest in the practice, particularly among young people. Source: the National Science Foundation

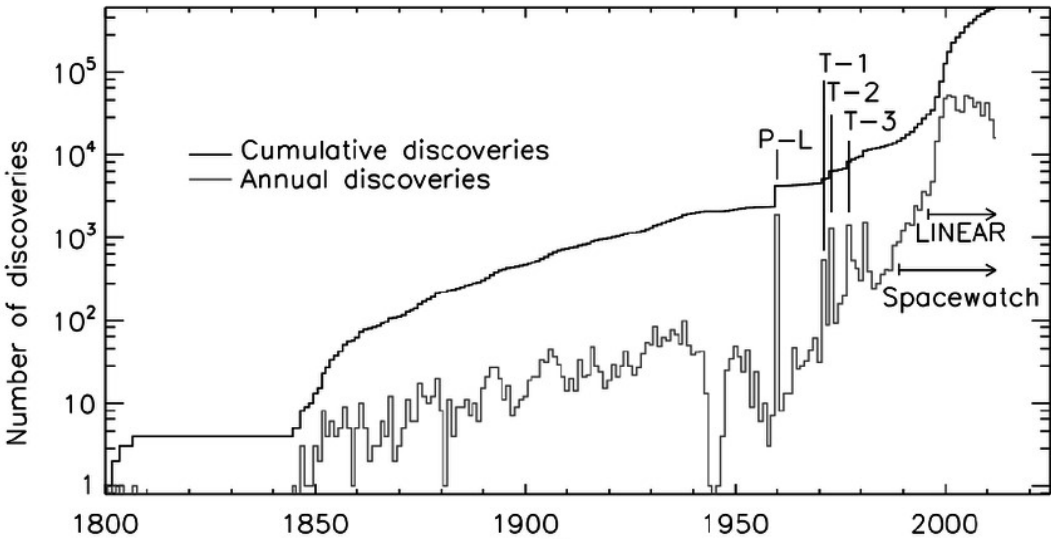


Figure 2: Cumulative number of known asteroids and the yearly discovery rate. Source: DeMeo et al., The Compositional Structure of the Asteroid Belt, 2015, doi: 10.2458/azu_uapress_9780816532131-ch002

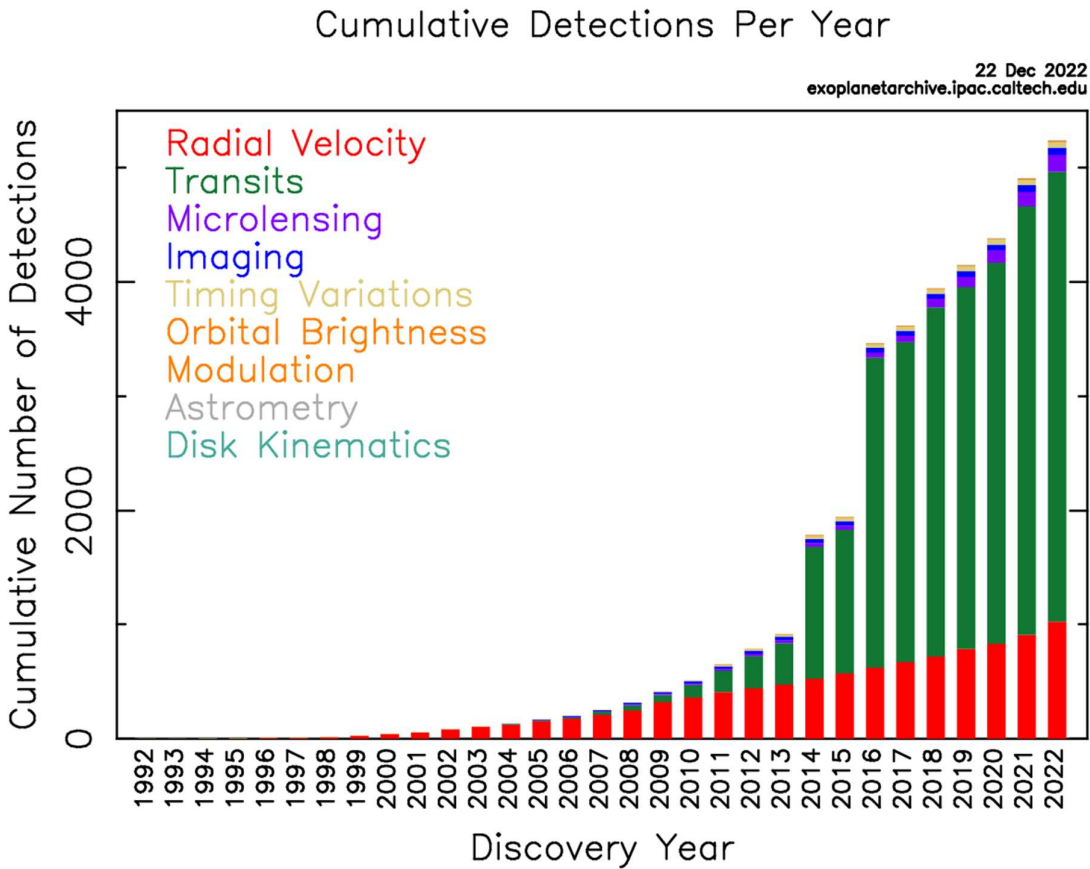


Figure 3 : Cumulative number of detected exoplanets, with the techniques of discovery. Source: NASA Exoplanet Archive