Cosmic semiotics: minor planet orbits and astronyms in the news

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Abstract

We analyzed the movements of 1,211 minor planets over 290 days, resulting in 351,190 data points, linking each minor planet's relative orbital position to major solar system features and the normalized count of articles containing its name in that day’s news articles. By presenting our data with authentication from electrical engineering’s signal analysis, we offer and support a simple theoretical framework of four, fundamental, astrological claims and counterclaim a fifth. We find that only astrological angles dominate orbital rhythms with peak rates of astronyms in Google News. As well, Gauquelin sectors were found in the signals.

0. Introduction

While all known astronomical objects have unique numerical identifiers at the least, the act of assigning an official, proper name can be thought of as optional or non-essential at least from the perspective of astrophysical attributes. For example, of the more than 1,100,000 minor planets that have currently been discovered, only some 23,500 have been assigned proper names by the Working Group of Small Bodies Nomenclature (WGSBN) of the International Astronomical Union. (National Aeronautics and Space Administration, 2022) (International Astronomical Union, 2022)

While parameters like size or speed of an astronomical body are quantitative, a proper name is a non-quantitative, non-physical attribute. These are understood to belong in the realm of language, meaning, and mental association, and not in the formal, quantitative realm of physics.

In some branches of science, like biology and chemistry, nomenclature rules can be strict, but the names of astronomical objects often have a more ornamental, and in the case of minor planets, sometimes even a frivolous character. But even minor planet names like “Tweedledee”, “Mr. Spock” or “Racquetball” are helpful for easy identification, categorization, and memorization.

Minor planets are often named after people, places, mythological characters, and so on. Clifford Cunningham has documented the history of minor planet research, including discussions on the naming of Ceres, Pallas, Juno, and Vesta -- the first four minor planets that were discovered. (Cunningham, 2016) (Cunningham, 2016) (Cunningham, 2017) (Cunningham, 2017) Paul Murdin has also written about minor planets and their discoverers, and he tracks the changes in naming rules and conventions from the early 19th century to the 21st century. (Murdin, 2016)

Astrophysics does not deal with linguistic *meaning*, so there is nothing in astrophysics to suggest the possibility of a relation between the orbital positions of a named minor planet and the occurrence of its proper name in very different (non-astrophysical) context, like for example, the content of news articles. We must adopt an astrological mindset to entertain the possibility of there being such meaning-based correlations of this kind.

Holt studied the general volume of news events as a function of a bevy of outer planet angular degree differences, from Jupiter to Pluto, and found high conditional probability of the number of these aspects in high news years. (Holt, 2022)

Our study herein hopes to considerably expand this approach by considering many more aspects, using highly specific news search terms from names of minor planets participating in the aspects, and using numerically exact functions within an orb of 1 degree.

The main goal of this paper then is to present data in support of the claim that proper names of minor planets do work in the astrological sense, that they participate in both the *meaning* and the *means* or mechanisms of occurrence of event(s) on Earth.

For example: if American former boxing champion Mike Tyson is in the news, it might make sense for an astrologer to inspect the orbital position of minor planet 13123 Tyson (1994 KA) which was in fact named after astrophysicist Neil DeGrasse Tyson. The proper minor planet name "Tyson" is not exclusively associated with Neil DeGrasse Tyson. Anecdotal astrology suggests that it is more accurate to think of names instead as a spectrum of *potential* associations, i.e., establishments of *semantic potential*. (Figure 1)

The problem with researching relatively novel astrological variables like minor planets, comets, black holes, and so on is that there's no broadly accepted current astrological theory that can be used as a starting point. (In ancient Indian texts there is some reference to comets, meteors, and even the idea of the actual black hole in our galactic center as Vishnu's belly button, etc. [See reference in my calibre library.]) In the case of minor planets, only a relatively small group of current professional astrologers think of them as relevant or valid. Popular textbook-style texts by authors like Sakoian and Acker that are regularly used as a reference for scientific astrological research have nothing to say about minor planets. (Sakoian and Acker, 1982)

There is some recent critically acclaimed literature. Melanie Reinhart has written a monograph about minor planet Chiron. (Reinhart,2009) Demetra George and Douglas Bloch have written about Ceres, Pallas, Juno, and Vesta; the first four minor planets that were discovered, and Dutch author and astrologer Benjamin Adamah has recently written a more much more systematic work covering no less than 950 named and unnamed minor planets. (George and Bloch, 2003) (Adamah, 2017)

To allow for solid, critical reflection on minor planets for both astrologers and laypeople, we will first clarify a presumed theoretical framework and offer five core astrological assumptions.

Associated with this article is a co-published perspective that includes some metaphysical ramifications of the data. Therein we will propose that the hermeneutic precision that minor planet astrology allows for seems to be incompatible with a purely materialist approach to astrology often implicitly assumed to be a characteristic of scientific astrology.

The structure of the rest of this article is as follows:

1. Presentation of our theoretical framework,

2. Presentation and discussion of data and results,
3. General discussion,
4. Goals for the future,
5. Conclusions.

1. A basic theoretical framework

Human cultures all over planet Earth have been reading the sky for thousands of years. (Roberts & Oshop, 2016) Nowadays, astrologers can use both ancient and modern sources and techniques. For example, we may follow ancient Sumerian, Vedic, Hellenistic, Egyptian, Chinese, or other traditions. At the same time, astrology is open to new influences and discoveries.

In the 20th century, we saw developments like Uranian astrology [NOTE COSI Ebertin], harmonic astrology [NOTE Addey en Hamblin2], minor planet astrology, and so on. Each tradition or school has its own theories and tools.

We propose a lean theoretical framework that grounds the design of our experiment.

A branch of data science

Scientific research of astrological claims can be thought of as a branch of *data science*. In contrast, popular astrology is more like a *craft* or an *art*. Non-scientific astrologers can look at the sky or at a chart of the sky and weave a story based on a subjective interpretation of salient symbols and signs. Scientific astrology on the other hand cannot be based on anecdotal, idiosyncratic interpretation. We propose that compelling, convincing results can only be obtained by analyzing sufficiently large datasets, using appropriately sophisticated mathematical tools. The extra effort has the chance of an immense payoff, effectively building a bridge between science and art.

General assumptions

All astrological traditions and schools assume that the movements of celestial bodies relative to each other convey *meaning*, but in an encoded way.

Astrology tries to decode and interpret (various dialects of) a great natural language of the sky that seamlessly integrates astronomical (physical) elements with semantic elements, such as proper names, symbolism, and metaphor. At any moment in time, the state of the firmament can be read and interpreted in terms of this natural language of the sky. As the physical state of the firmament changes, the semantic state, or better: the *semantic potential* also changes.

More dramatically, astrological traditions also assume some kind of correlation between the semantic potential of the firmament at any given moment in time, and the likelihood that certain meaningfully related events will occur on Earth. In short: as Above, so Below.

Meaningfully related events can come in any form. Notably, they can be physical events, mental (psychological) events, or combinations of both, in the personal and/or collective realm(s). Special cases of meaningfully related events are births as well as many other kinds of new beginnings. They are thought to inherit certain aspects of the semantic state or potential of the firmament, like a cosmic imprint, that carries on throughout the existence of the person, place, or thing, and may even precede or surpass that timespan.

Astrological structure

Structure is a relatively neutral metaphor. We propose that a dataset has or demonstrates astrological structure if four criteria are met:

a) A set of events happening on Earth at time t_0 is queried.
b) A configuration of relevant variables in the *physical firmament* at time t_1 is specified.
c) A predetermined set of *hermeneutic rules* is available to guide preferred astrological interpretation of the relevant configuration at t_1 (for example to avoid vagueness, overly literal interpretation, and so on).
d) There is a direct, meaning-based, *acausal salience* of the set of events in the physical firmament (b) at time t_1 and the preferred hermeneutic interpretation that leads to understanding of events at t_0 (a). (Of course, t_0 may be the same as t_1 but does not have to be.)

Depending on the specifics of the dataset, the complexity of the astrological configuration and the opportunities for validation of meaning-based correlations, the act of interpretation can either be relatively straightforward or problematic. Astrological structure can be obvious, vague, or anything in between.

Five assumptions

We offer a set of five core assumptions. Although the wording we choose might seem unfamiliar at first, these assumptions describe elements of the language of the sky that many contemporary astrologers would recognize or even agree upon.

Assumption 1: When assessing the semantic potential of the firmament, the positions of astrophysical bodies in relation to the Sun and Moon are relatively important as bigger and brighter astrophysical events are more significant in semantic potential.

Assumption 2: The semantic potential of any individual celestial body may be related to notable embodied metaphors, e.g., to its proper name and to the associative potential of that name.

Assumption 3: Exact harmonic angles between celestial bodies point to peak levels of semantic modulation and stronger effects.

Assumption 4: Each harmonic angle has its own modulatory quality or effect.

Assumption 5: The semantic potential of any celestial body is continually being modulated by the semantic potentials of other celestial bodies. Because of constantly changing relative positions, semantic modulation is a dynamic and complicated process.

Assumption 1: Analogical reasoning creates embodied metaphors.

If we think logically, we might conceptualize visibility, luminosity, size, orbital characteristics and so on as objective measures. But if we think analogically, these same characteristics and observations may also, or instead, represent embodied qualities that could have metaphorical or symbolic use. For example, big, bright objects are often assumed to be more important than small, faint objects, such as for the Sun and the Moon relative to the visible planets of Mercury, Venus, Mars, Jupiter, and Saturn. The same principle is also true for fixed stars. A bright star is sometimes thought to be more important than a faint star. Based on this analogical reasoning, many astrological traditions have held as symbolic truth the recognition of the Sun and the Moon as particularly important bodies.

Assumption 2: Celestial embodied metaphors create semantic potentials.

In the astrological worldview, celestial bodies are connected to a (unique) field of potential meaning and symbolism. We could call this the body's semantic potential or fingerprint.

For example, the planet Mars is often associated with the more assertive aspects of the struggle for life, such as fights, ambition, physical fitness, and so on. Its red color has been associated with blood. On the other hand, the planet Venus, often twinkly and bright, is usually associated with the prettier and finer things in life such as the accumulation of socio-cultural capital.

Of course, we do not mean to imply that all (ancient or contemporary) traditions would agree with these particular associations. Rather, popularization of shared semantic potential informs the foundation even of textbook approaches toward astrological meaning.

We propose that in general, the semantic potential of any celestial body is related to notable embodied metaphors such as to the official proper name of the object, including associations brought up by that name. For example, Mars in English is officially named after the ancient Roman god, Venus is similarly named after the ancient Roman goddess and so on. Furthermore, especially in the case of mythological or archetypal names, certain aspects of associated myths seem to further enrich the semantic potential. (The fact that most myths evolve over time is an interesting potential avenue for studying evolution of semantic potentials.)

For all minor planets and other objects discovered since telescopes were first pointed at the sky, the discovery chart of an object (in other words: the state of the firmament at the time of discovery) is also said to supply additional astrological information about the semantic potential.

Assumption 3: Geometry and meaning.

All astrological traditions find meaning in geometric relations between celestial bodies. Longitudinal angles, or harmonics, seem to be the most important class of geometric relations. If we project the positions of Sun, Moon and planets on a flat plane, we see the changes in geometrical relations between these bodies. Certain geocentric ecliptic longitudinal (GEL) angles have their own names: an angle of 0° is known as a *conjunction*, 180° is called an *opposition*, 120° is a *trine*, 90° is a *square*, 72° is a *quintile*, and so on. A conjunction can be thought of as the first harmonic, an opposition is the second harmonic, a trine the third harmonic and so on, as defined in the predominant, contemporary, Western, Tropical tradition. (Addey, 1977) The effect is usually thought to be most noticeable when the harmonic angle between two bodies is exact (exactly 0°, 180°, and so on), but it is already, or still, noticeable when the angle is somewhat off, often by an *orb* of quite a few degrees. (Astrodienst, Wikipedia)

Assumption 4: Distinction of meaning.

Each angle type is distinct. For example, the effect of an opposition (180°) is thought to be different from that of a square (90°) difference angle, even though the opposition is a repetition of 90°.

Assumptions 5: Modulation of meaning.

Planetary placements modulate each other, When, for example, the planets Mars and Venus are conjunct, their semantic potentials are typically assumed to modulate each other in a certain way. If they are in opposition, their semantic potentials are typically assumed to modulate each other quite differently. This modulation is thought of as a continuously changing process.

We now have a basic framework. Other well-known astrological frames like zodiacs, house-systems, midpoints and so on are for now thought of as secondary, to keep things as simple as possible. Note that although we have only postulated five assumptions, the combination of the fourth and fifth assumptions especially allows for a huge amount of semantic variation.

Golden aspects as an ad-hoc additional geometric variable

As an extra analytical tool, we will also consider a different, much less popular class of longitudinal angles, based on the Golden Ratio or Φ (pronounced "phi").

The Golden Ratio is a mathematical ratio of approximately 0.618 (Φ), which is found throughout measurements of both nature and human-created art, such as solar system planetary distances, galaxy shapes, seashells, plant development, our own bodies, and even the computer screen or paper on which you read these words.

Golden- or Φ-aspects offer a fresh perspective on our own results and on previous research, specifically the well-known Gauquelin-sector pattern.

In a more general sense, we feel that the Golden Ratio and its derived golden aspects are non-trivial features of the geometric fabric of our solar system. Recent work by others substantiates this. (Currey, 2013)

As far as we know, astrological, geometric relations based on the Golden Ratio were first described in the 20th century by German astronomer and astrologer Theodor Landscheidt, giving his most complete description of golden aspects in Landscheidt, T. (1994). For a short evaluation of Landscheidt's career in the context of scientific astrological research in the 20th century, see Bruce Scofield's well researched book 'The Nature of Astrology'. (Scofield, 2023)

Technical description of golden aspects

Theodor Landscheidt proposed a group of 14 golden aspects (Landscheidt. 1994, p. 310—311). In contrast to harmonic aspects, in a qualitative sense the golden aspects seem to form a homogenous group. Landscheidt primarily sought to interpret the golden aspects along the lines of the polarity stability vs. instability and more speculatively as representing the polarities of the rational vs. irrational or even consonant vs. dissonant. Landscheidt also proposed that golden aspects and harmonic aspects have a complementary, yin-yang-like relation. (Landscheidt, 1994)

We keep elements of Landscheidt's innovative ideas, specifically the use of his major and minor Golden Cross calculations. These specific angles are calculated in the following way.

The first minor Golden Cross (GC1) is calculated via multiplying 360 by (1- Φ) and including its squares, done by adding 90, 180, and 270 modulo 360.

The second minor Golden Cross (GC2) is calculated via multiplying 180 by (1- Φ) and including its squares.

The first major Golden Cross (GC3) is calculated via multiplying 360 by Φ and including its squares.

The second major Golden Cross (GC4) is calculated via multiplying 180 by Φ and including its squares.

Lastly is included a set of additional, empirically derived angles also used by Landscheidt: a = Φ - (1- Φ) multiplied by 360 and its squares, as well as those for (1-a). Landscheidt referred to these as G3 and as octaves. Here, a is also called the golden aspect contraction. (STRIKING GOLD - celebrating over 50 years of the Society of Technical Analysts, 2022)

For this study, we only need to use GC3 and G3. Given our accuracy level being within one degree, we will be considering the whole-number divisors of the rounded golden angles. Numerical equivalencies of these angle calculations are included in section 2.3.F where they participate in describing behavior of the data.

2. Presentation and discussion of data and results

2.0 An example of angle differences

An example of the astrology we are measuring is below. On the first day of collection, Feb 15, 2022, at Noon UTC, we measured the *geocentric ecliptic longitude* (GEL) or Tropical zodiac degree of each of the 1,211 chosen minor planets, one of which is called Tyson. Its GEL value was 117 degrees. At the same time, we measured the GEL value of 11 solar system features, one of which is the Sun. Its GEL was 327 degrees. Thus, the angular difference of Tyson from the Sun was +150 degrees. Tyson was 150 degrees ahead of the Sun at that time and date.

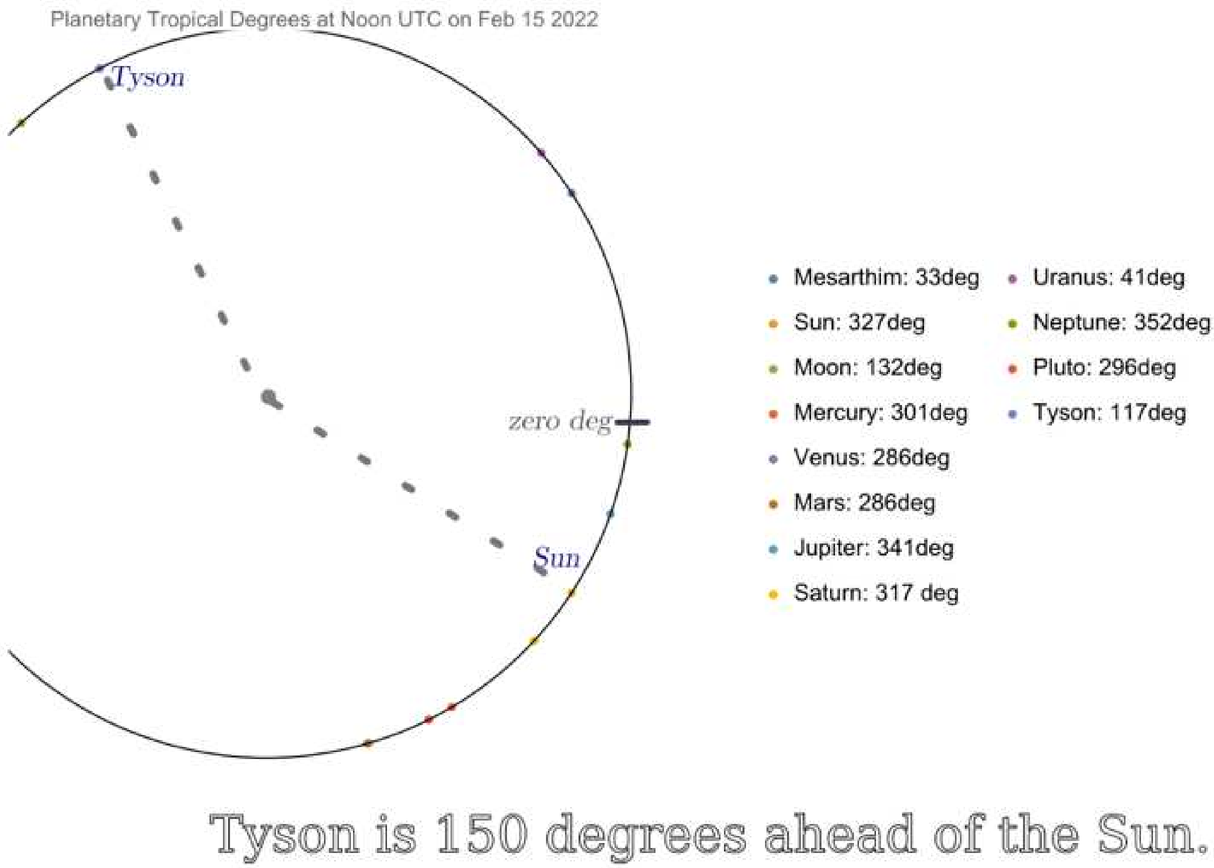


Figure 1: An example of angular difference

Similarly, we can easily compute the angle difference of Tyson to the other ten solar system features, and like that, the angle differences of all the minor planets to all the solar system features were kept in a database that is freely accessible. (Oshop, 2023)

2.1 Method of collection of data

1,211 minor planets were randomly chosen from *Wolfram Mathematica*'s Minor Planet dataset. We required them to have an official, proper name (versus one containing numbers) to test our hypothesis that a name may appear in the news more often on a day when the namesake minor planet is in an astrologically salient geometric relationship with the planets, Sun, or Earth's moon of our solar system, as well as astrologically notable fixed points.

For each such proper name, Python coding automated the collection of the count of news articles in Google News with that name as the search term. The searches were done at noon UTC time every day from February 15, 2022, until December 1, 2022, inclusively. For each of these 290 days (about 9 and a half months), geocentric ecliptic longitudes of each of the 1,211 minor planets were calculated as well as the count in Google News of distinct articles referencing their names. Thus, the total number of datapoints is 290 times 1,211 or 351,190.

We stopped collection only because the scraping code became inconsistent with a sudden change in access to Google News, and our code no longer worked. We did not want to create a new code set for drawing new article counts to ensure that all data provenance is consistent with each other.

Computation in the Wolfram language of each day's geocentric ecliptic longitude for both the special points and each minor planet allowed calculating their angular differences. A spreadsheet was thus constructed for the number of Google News articles published on that same day for each minor planet name. The following information in this section comes entirely from the computations on this spreadsheet. By obtaining the references, the reader has all code and all data, everything needed to recreate the study. (Oshop, 2023)

Each minor planet's article counts were normalized to the unit circle, so that they could be compared to each other, even if one minor planet's name had more articles on daily average than another's. (Wolfram Language, 2007)

The degree values were rounded up to the nearest whole number modulo 360 and grouped by this number. The upper whole number was chosen (compared to tenths, hundredths, etc. of a degree) for reasons three-fold: a. collection took about 30 to 60 minutes a day, so a higher precision would be deceptive, especially for the quick-moving Moon, b. the number of values in the standard deviations would decrease sharply, and hence error rates per unit of measure would skyrocket if we did not do this, and c. the upper rounded value was chosen compared to a mean rounded or lower rounded value, since much of the English speaking world is at or to the west of the UTC line through the United Kingdom. [https://www.timeanddate.com/time/map/] So, the minor planet degrees would be expected to generally increase throughout that day.

Thus, the precision of our data is to five significant digits of a degree, but the accuracy is to within one degree. [http://www.umich.edu/~ners580/ners-bioe_481/lectures/pdfs/1978-10-semNucMed_Metz-basicROC.pdf]

From a certain day's placement of the Tropical degree of the minor planet, the following eleven features were separately subtracted: that day's Tropical degree for Mesarthim, Sun, Moon, Mercury, Venus, Mars, Jupiter, Uranus, Neptune, and Pluto, all calculated at noon UTC. These angular degree *differences* would be the same whether our frame of reference is the Tropical zodiac or a Sidereal zodiac with any ayanamsha.

Mesarthim is a fixed star. It was chosen somewhat arbitrarily as a stand-in for all fixed points as it is (currently) the closest fixed star to the Sidereal placement of the Sun at the point of the Vernal Equinox. It does move but very slowly over the course of thousands of years. All other fixed reference points (such as the First Point of Tropical Aries, the Tropical Sun placement at Summer Solstice, etc.) just represent a phase-shift to the Mesarthim data. As such, the Mesarthim wave analysis of amplitude, period, and frequency applies equally and conveniently to the minor planet placement data's angular difference to any fixed point of the zodiac. Only the phase-shift would differ by some constant.

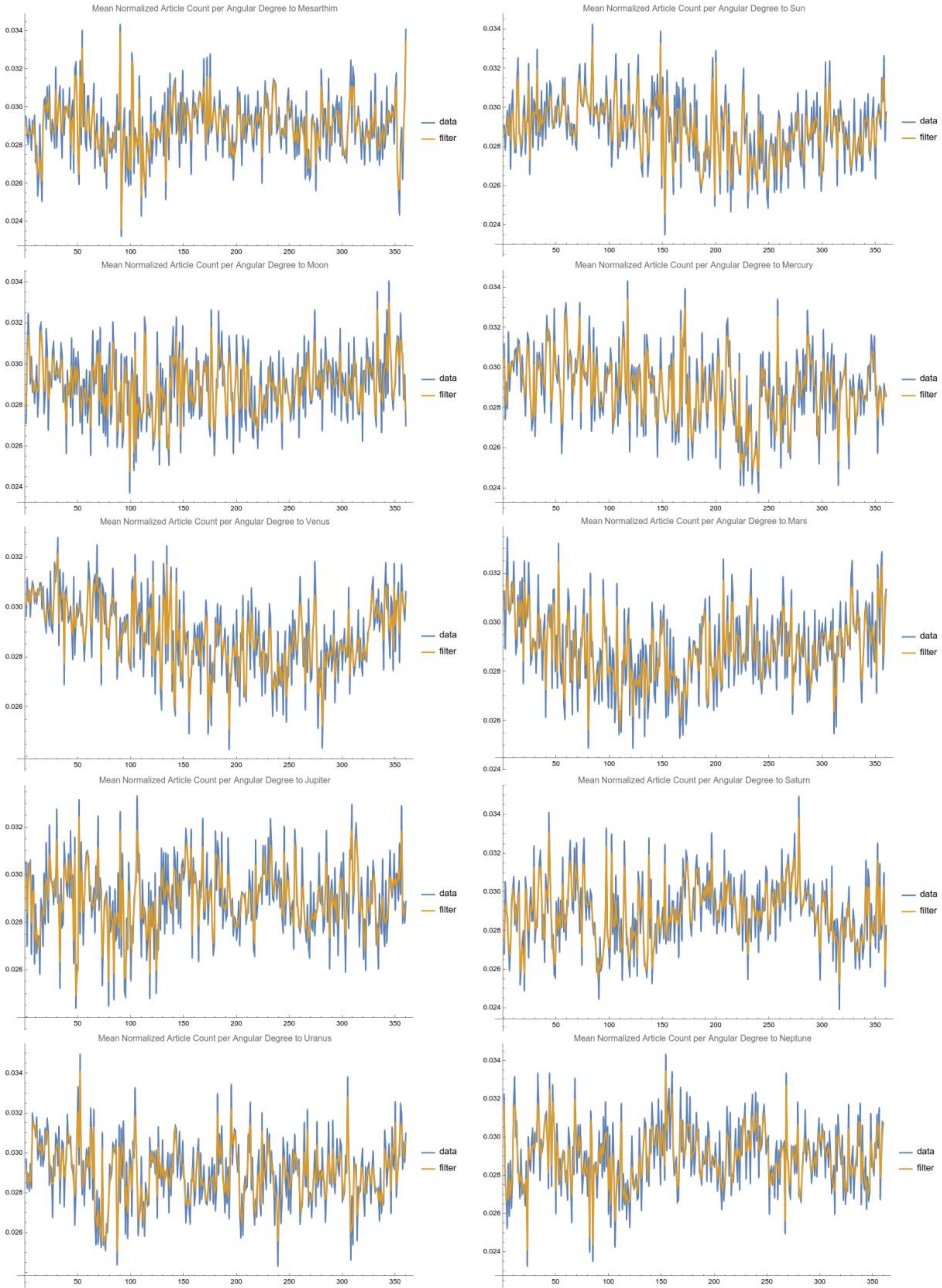
In summary, the article counts were normalized across the total collected set for each of the 1,211 minor planet names. Then, these normalized article counts were averaged per whole-number unit of angle difference from 0 to 359 degrees to each major solar system feature, yielding eleven distinct sets of average normalized article count activity across the zodiac relative to the eleven solar system features.

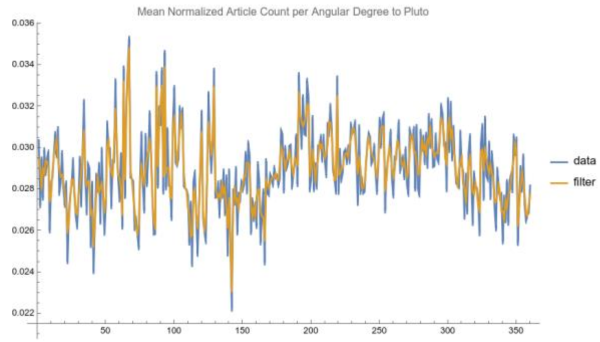
Noise reduction to the waves in the lists of angle difference data was performed via the Wiener filter method (of range 1 and fixed padding). (Wolfram Language, 2010)

2.1.A The data

The data and their corresponding filtered, noise-reduced equivalents are depicted and compared below for average angular difference of minor planet degree to each special reference point.

Table 1: Wave Presentation of Average Article Counts Per Geocentric Ecliptic Latitude





Thus, each orange data set represents a complicated but full wave of average article counts per geocentric ecliptic latitude difference across the 360 degrees of a zodiacal circle, filtered to reduce noise. The sequential points that comprise each orange wave are what we mean by the term *series* below.

Brief explanation of waves, including their amplitude, period, and phase

A wave is a "transfer of energy from one point to another without a transfer of material between the two points." (Kobes, 1999)

Three details about any given stationary, noiseless, pure, sinusoidal wave are enough to describe it: amplitude, frequency, and phase shift.

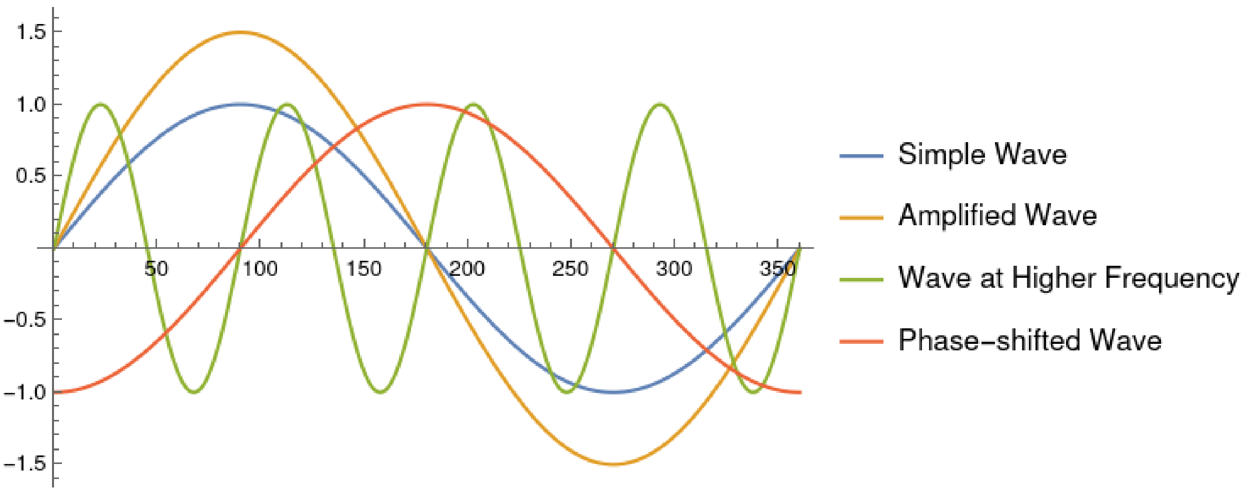


Figure 2: A look at types of simple waves.

Amplitude is a measure of the height of a wave. So, in the diagram above, the gold wave is more strongly amplified than the blue wave, even though they have the same frequency and phase shift.

Frequency measures how many oscillations occur in the full unit of measure which is here 360 angular degrees of the zodiac. Frequency also gives us the *period* of the wave, as far as period is the full breadth of measure (360 degrees) divided by the frequency. In the green wave above, four complete oscillations occur in the 360 degrees, so the period is 90 degrees.

Phase shift is the measure of how much the wave has shifted horizontally from the origin. The red wave above is of the same frequency and amplitude as the blue one, but it is phase-shifted by 90 degrees.

The decomposition of discretized, noisy, complicated waves such as is shown in our initial data (Table 1) into their additive stationary wave components was performed by the Discrete Fourier transform (DFT). (Smith, 1997).

Looking much like an audio graph of an audio clip of the human voice, those waves in Table 1 might at first seem fascinating but opaque to easy interpretation.

We can intuit the principle of Fourier analysis using musical analogy.

In the case of the audio voice graph, the sound it represents is all in there, but how do you get from the visual picture back to the sound again? Recording, compressing, transmitting, and recreation of audio all happen from software based on the information in such pictures.

There must be a mathematical way, and there is. One of the major tools of science of the last one hundred years is the Fourier Transform.

Think of someone playing a pure middle C note on a perfect piano. The Fourier transform would break down that note to a line, also called the fundamental: the one matching the frequency of middle C.

In Nature, things tend to be more complicated. An actual piano would have rough, fainter sub-harmonics that build on and modify the loud one. The loud one would still have the exact shape of the sinusoidal wave of perfect middle C, but these rough, fainter frequencies would add to that first dominant curve and result in a final wave form that is more complicated than, but resembling, a pure C note.

This set of more faint notes would also appear in the Fourier Transform plot, but as shorter lines and at placements along the horizontal axis that correspond to each of their frequencies. The heights give their amplitude modification of the first, fundamental note. Typically, the whole wave can be summarized in just a few lines. That is how digital compression and removal of noise in sound happens.

Returning to the sound of the human voice, the complex stacking of a rich variety of sub-harmonics could still be teased apart by the wonder of the Fourier Transform, but into dozens of lines.

So too, the Discrete Fourier Transform allows for isolation of the strongest peaks, their phase-shifts, their frequencies, and related periodicities in our data.

Suppose then we were to play a thick musical chord on a piano, using ten fingers to strike ten keys simultaneously. The resulting complex (musical) sound could be used as input data for Fourier analysis. The result of the analysis would be ten lines giving a detailed account of all ten sonic “components” of the complex sound. For example, we would be able to find out exactly which ten keys were struck, the relative force with which each individual key was struck, the resulting overtones (the upper part of the sound spectrum that shapes timbre) as well as other resonances and residual noise. In other words: we’d get a detailed type of wave analysis.

Tulip used Fourier Transforms of NASA data to find acausal salience of zero-degree angular differences (i.e., conjunctions) of Jupiter, Saturn, and Neptune, as well as the Sun against the Solar System Barycenter in ways that may inform cultural, ongoing, meaning-making for humanity across the millennia. (Tulip, 2022)

2.2. Methods of wave analysis

For our filtered data, tests for randomness and stationarity (and hence cyclicity) of each series were performed by a Ljung-Box autocorrelation test and a Dickey-Fuller unit root test (accounting for an underlying nonzero mean), respectively.

Correlograms of the filtered data were then computed to find hidden rhythms.

More advanced statistical tests of wave analysis follow with power spectral densities (PSDs) of the filtered data to visually see peak frequencies and ACF (autocorrelation function) plots with confidence bands as confirmation of complete lists of periodicities that are likely beyond white noise.

Fourier Transform analysis revealed peak frequencies with associated periods in the filtered data which were found to be major astrological angles. Plots of the filtered data relative to zero degrees Aries were compared to Gauquelin sectors.

2.3. Results of wave analysis with discussion

2.3.A Tests for randomness & nonstationarity in the filtered data

A nonrandom series is one that exhibits systematic patterns or trends over time rather than behaving like a sequence of purely random values. In other words, there are certain predictable behaviors or dependencies in the data.

A purely random series, often referred to as "white noise," does not exhibit any patterns. Each value in a white noise series is statistically independent of other values, and it does not exhibit any predictable structure.

In series analysis, various tools and plots, such as the autocorrelation function (ACF) used here, can help identify and quantify nonrandom structures in the data.

A stationary series is one whose statistical properties, such as mean and variance, are all sufficiently constant over time. Stationarity is a crucial concept in series analysis because many analytical tools and statistical tests rely on this assumption.

There are two primary types of stationarity:

- Strict-Sense (or Strong) Stationarity: This implies that the joint statistical distribution of any set of observations remains the same when shifted by zodiacal degree. This means that all properties of the series (e.g., mean, variance, skewness, kurtosis, autocorrelation) are invariant to degree shifts.
- Weak-Sense (or Weak) Stationarity: This is a less strict condition where the mean and variance of the series remain sufficiently constant over degrees, but not all the distributional properties. That is, the autocovariance function of expectation at zodiacal degree d, which measures the degree of linear dependence between two points in the degree series separated by a lag k, depends on k and not on the actual degree d. Most of the time, when people refer to stationarity in series analysis, they are referring to weak-sense stationarity, as do we.

For an alpha one-sided statistical significance level of 0.05, to control the family-wise error rate for the 22 tests below, the conservative Bonferroni correction (p-value upper-bound for significance) is 0.05/22 or 0.002272727. (Irizarry, 2021) That far exceeds by many orders of magnitude all the p-values listed here.

Thus, all eleven special point data waves can be said to be statistically highly likely to be both nonrandom, i.e., containing structure beyond white noise, and stationary. Establishing these facts is important for the validity of the correlograms, PSD plots, and ACF graphs below.

The presence of an underlying periodic component(s) that can be detected above noise levels is necessary for cyclicity in a noisy wave. If the periodic signal(s) is strong, the noise level is low, and the pattern repeats consistently, these are sufficient conditions to observe cyclicity.

Our test for nonrandomness in each data wave is a specific type of autocorrelation test that looks for one or more signals relative to white noise, suggesting that each data wave is extremely likely to have some repeating regularity.

Thus, the statistical success in establishing low relative noise and high regularity establishes a strong likelihood for some cyclicity for the data wave of each of the 11 special relative points.

The chance of randomness in the data exists, but it is something like the chance of acquiring a cup of water and having it be one particular cup of water out of all the cups of water on, in, or near Earth.[1]

Table 2: Statistical Analysis for Randomness and Nonstationarity in Data

Relative Special Point	Ljung-Box Statistic for Randomness	P-value for Randomness	Dickey-Fuller Statistic for Nonstationarity	P-value for Nonstationarity
Mesarthim	111.974	7.86628×10^{-22}	-187.999	9.49505×10^{-12}
Sun	280.633	1.1501×10^{-57}	-142.285	1.48263×10^{-10}
Moon	114.471	2.3572×10^{-22}	-178.753	1.56116×10^{-11}
Mercury	289.373	1.54657×10^{-59}	-122.589	6.45372×10^{-10}
Venus	541.224	1.10073×10^{-113}	-106.273	2.64559×10^{-9}
Mars	338.364	4.85371×10^{-70}	-123.653	5.92611×10^{-10}
Jupiter	163.745	9.52852×10^{-33}	-163.365	3.79329×10^{-11}
Saturn	280.556	1.19454×10^{-57}	-130.008	3.61301×10^{-10}
Uranus	241.284	2.98518×10^{-49}	-122.162	6.68008×10^{-10}
Neptune	206.406	8.20935×10^{-42}	-159.595	4.7757×10^{-11}
Pluto	320.99	2.58909×10^{-66}	-124.408	5.5805×10^{-10}

2.3.B Correlograms of filtered data help visually detect hidden rhythms in the filtered data waves.

A correlogram is a plot that displays the convolution of the data with itself. That is, it represents the area of overlap for each degree as the dataset for each special point slides across itself. The correlogram is helpful in series analysis because:

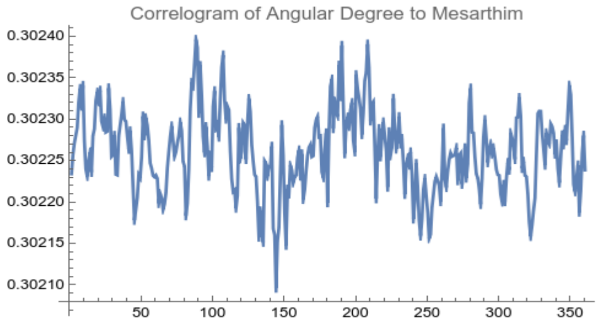
- It supports identifying the presence of autocorrelation in a series.
- It gives insights into whether the series is stationary or if it has some form of trend or seasonality.
- The patterns observed can guide model selection for forecasting.

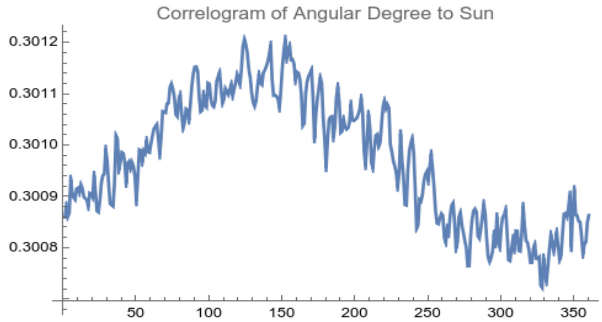
The correlograms of the angular differences to Sun, Venus, and Mercury are the cleanest sinusoids, visually. The later power spectral density plots corroborate this observation with those special point series having frequencies with the highest powers.

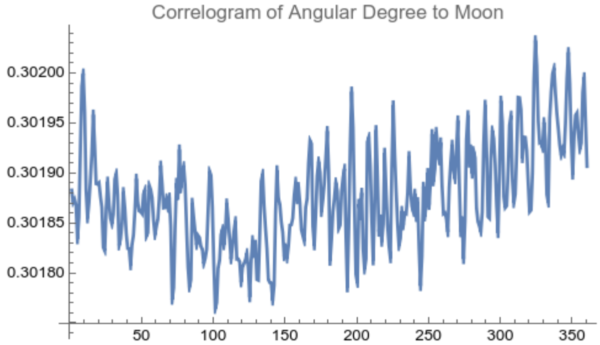
These correlograms are quick visual tools to support the findings that are more technically explicit in the PSD and ACF graphs. They are mostly included here as neat summaries for the trained eye of the results of PSDs and ACFs.

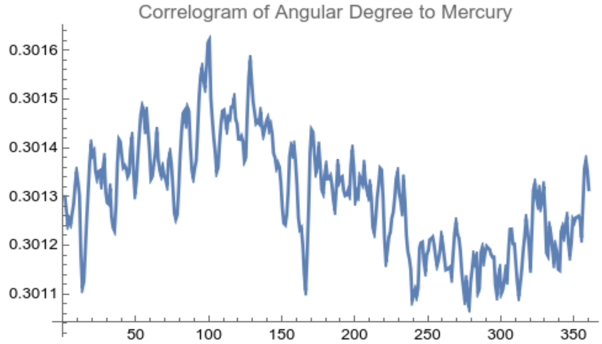
Table 3: Correlograms of Filtered Data Waves

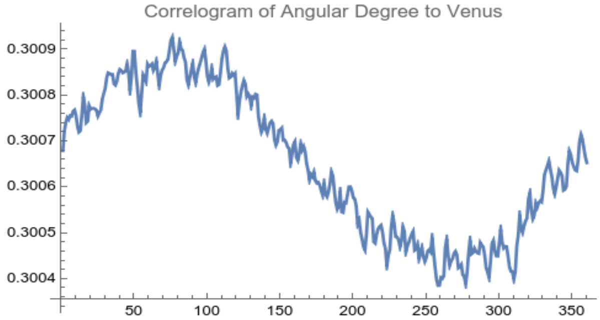
[1] The Earth's hydrosphere (all water on, above, and below the surface of the Earth) is estimated to contain about 1.332 billion cubic kilometers (km^3) of water. [https://www.usgs.gov/special-topics/water-science-school/science/how-much-water-there-earth] There are 1 trillion liters in a cubic kilometer. There are 4.22675 liters in a U.S. customary gallon. There are 16 cups in a gallon. After unit conversions, the number of cups in 1.332 billion km^3 is: 5.06×10^{22} cups. Keep in mind this is a rough estimate, and it includes all forms of water: oceans, lakes, rivers, underground reservoirs, ice caps, and even the water vapor in the atmosphere.

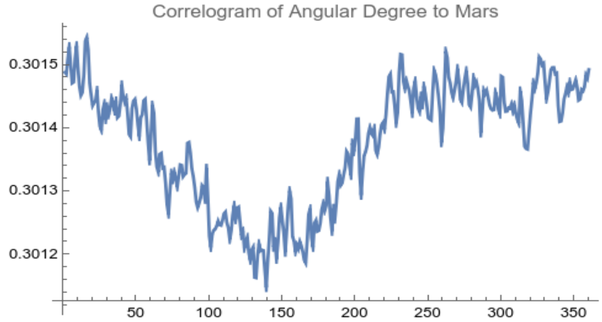

Correlogram of Angular Degree to Mesarthim
0.30240
0.30235
0.30230
0.30225
0.30220
0.30215
0.30210
50
100
150
200
250
300
350

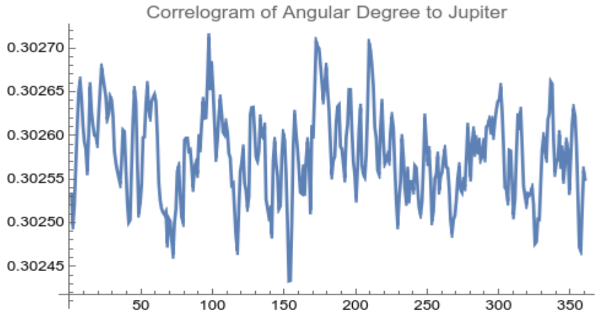

Correlogram of Angular Degree to Sun
0.3012
0.3011
0.3010
0.3009
0.3008
50
100
150
200
250
300
350

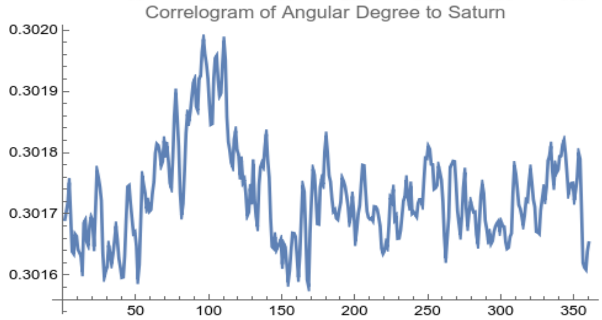

Correlogram of Angular Degree to Moon
0.30200
0.30195
0.30190
0.30185
0.30180
50
100
150
200
250
300
350

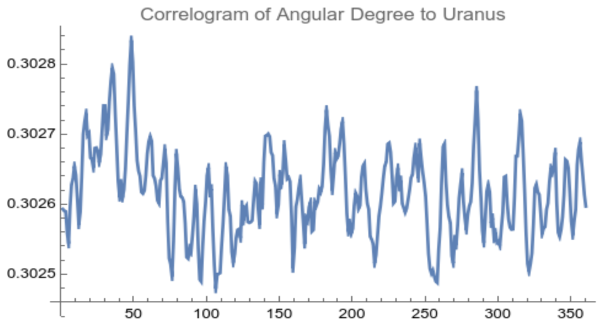

Correlogram of Angular Degree to Mercury
0.3016
0.3015
0.3014
0.3013
0.3012
0.3011
50
100
150
200
250
300
350

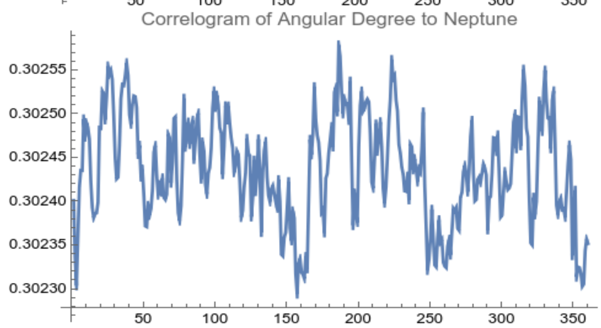

Correlogram of Angular Degree to Venus
0.3009
0.3008
0.3007
0.3006
0.3005
0.3004
50
100
150
200
250
300
350

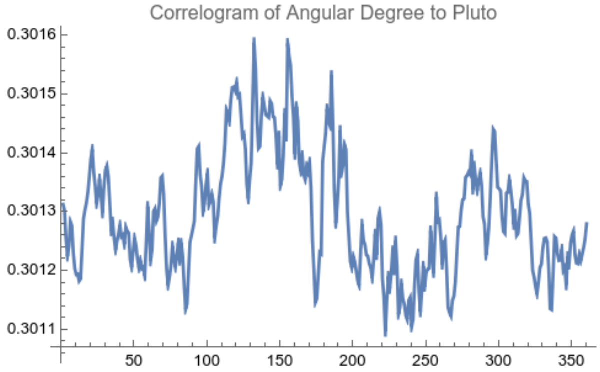

Correlogram of Angular Degree to Mars
0.3015
0.3014
0.3013
0.3012
50
100
150
200
250
300
350


Correlogram of Angular Degree to Jupiter
0.30270
0.30265
0.30260
0.30255
0.30250
0.30245
50
100
150
200
250
300
350


Correlogram of Angular Degree to Saturn
0.3020
0.3019
0.3018
0.3017
0.3016
50
100
150
200
250
300
350


Correlogram of Angular Degree to Uranus
0.3028
0.3027
0.3026
0.3025
50
100
150
200
250
300
350


Correlogram of Angular Degree to Neptune
0.30255
0.30250
0.30245
0.30240
0.30235
0.30230
50
100
150
200
250
300
350



2.3.C Power spectral densities (PSDs) of the filtered data waves allow visualization of peak frequencies.

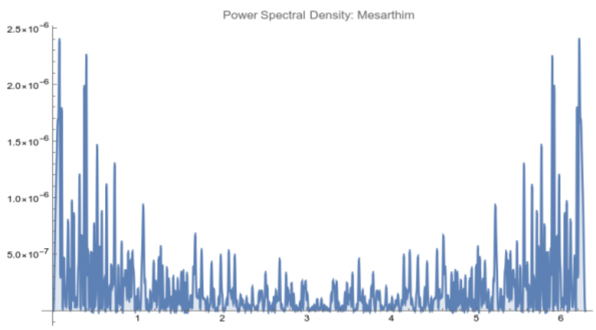
Power spectral density (PSD) is another fundamental concept in the realm of signal processing analysis. It gives a description of how the power of signals like ours is distributed over different frequencies.

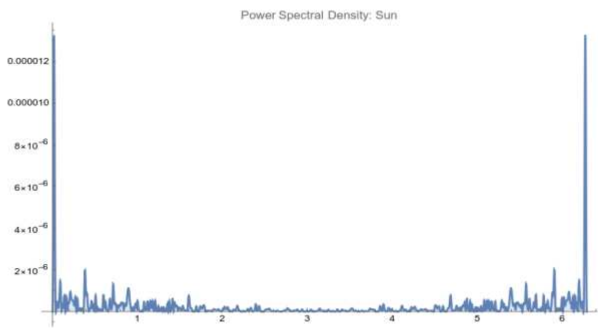
The PSD is visualized here using a plot with frequency (in radians by convention) on the x-axis and power (power density) on the y-axis. Peaks in the plot indicate predominant powered frequencies in the signal.

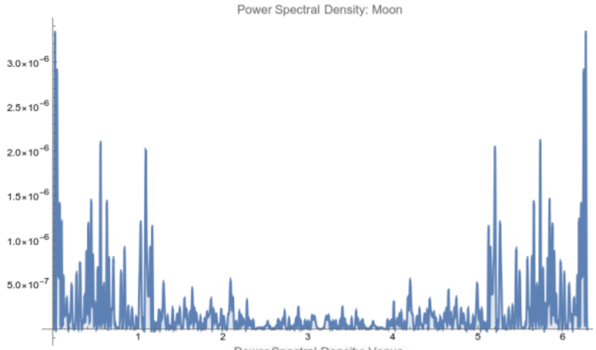
Sun, Mercury, and Venus (all astrologically classical benefics) have frequencies with the highest peak powers, *i.e.,* the strongest signals. Mars, Saturn, and Pluto (all astrologically classical non-benefics) have the next highest cluster of powers at their frequencies. Note the units of the y-axis that give these different scales.

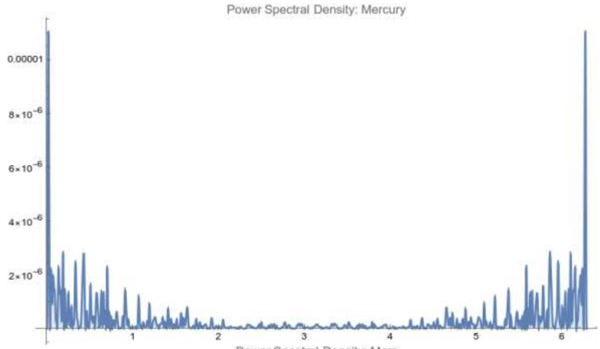
This may be the difference between news articles that are good news (involving benefic effect) vs. bad news (involving non-benefic effect). At the very least, our finding here offers a new hypothesis and avenue for subsequent study, namely classifying articles as favorable or unfavorable, perhaps by a neural net classifier, grouping them thus, and seeing if these different sets of peak frequencies are in the two groups, distinct in quality.

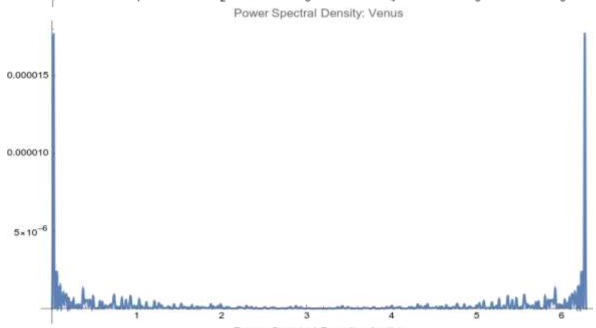
Table 4: Power Spectral Densities of Filtered Data Waves

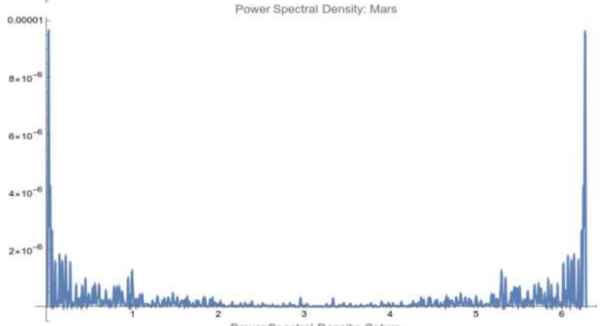


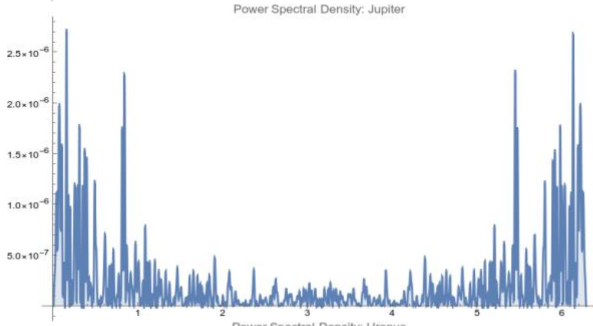


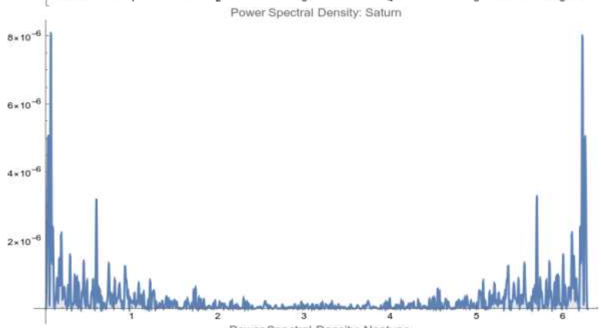


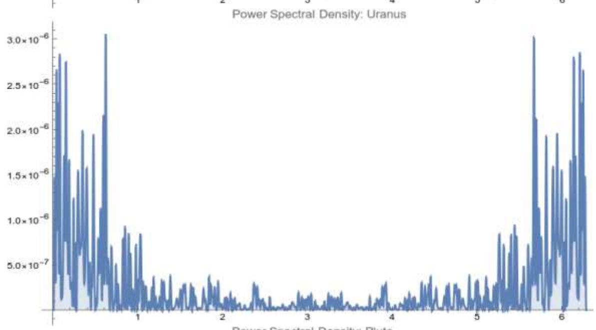


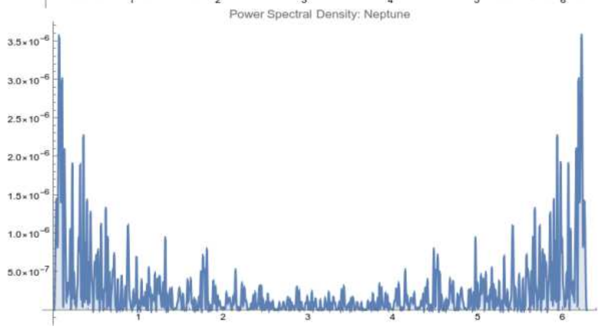


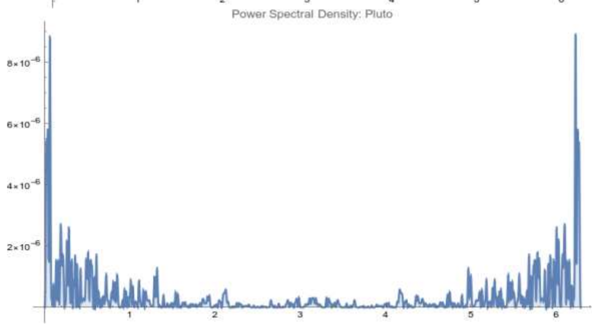












2.3.D Autocorrelation functions (ACFs) of filtered data including the 95% confidence interval show periods that are likely beyond white noise.

The autocorrelation function (ACF) is a tool that provides insights into the internal structure of a series, revealing patterns and helping in the identification of appropriate models for forecasting.

Autocorrelation, in the context of a series, is the correlation of the series with a lagged version of itself. In simpler terms, it measures the relationship between a value and its previous (or future) values in the series. ACF values range from -1 to 1.

An ACF value close to 1 indicates a strong positive correlation: as one value of the series increases, the other tends to increase as well. An ACF value close to -1 indicates a strong negative correlation: as one value of the series increases, the other tends to decrease. An ACF value close to 0 suggests no correlation: changes in one value in the series do not predict changes in another value, k degrees later.

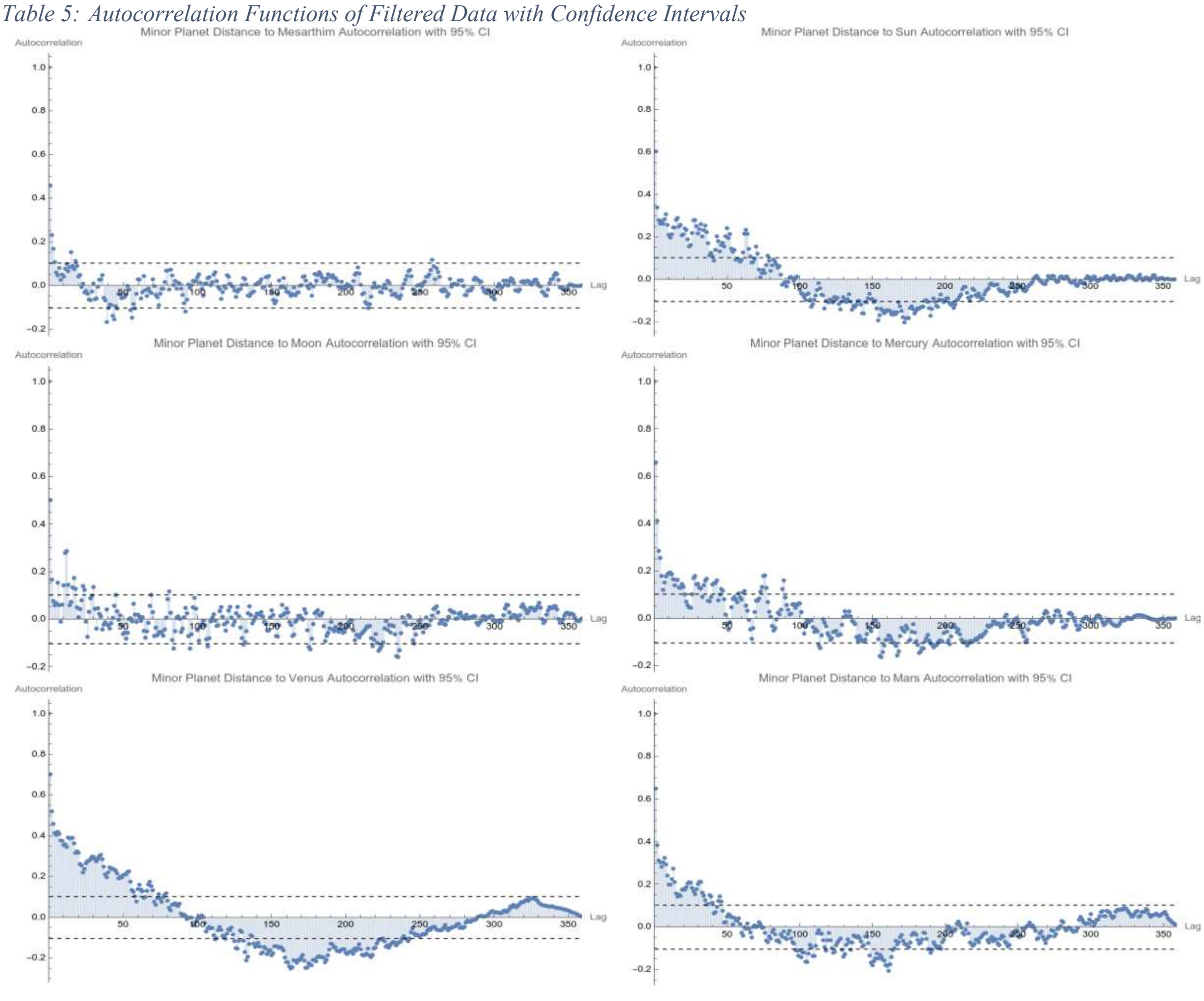
The graph often displays horizontal lines representing statistical significance levels (e.g., the dashed lines representing 95% confidence intervals used here). Correlations outside of these bands are typically considered statistically significant, suggesting that those correlations are not due to random chance; they are likely significant beyond white noise.

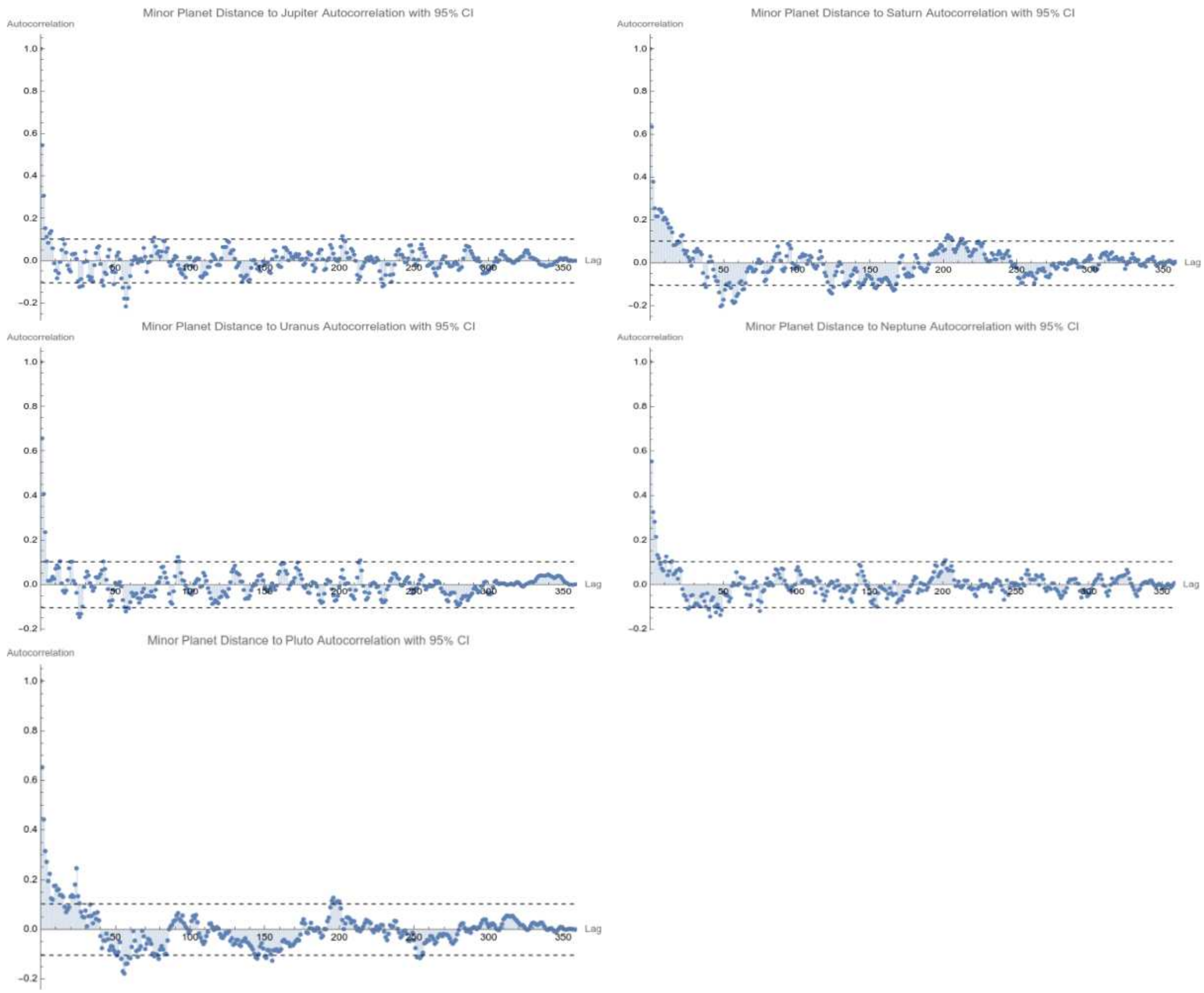
The x-axis represents the lag k. The y-axis represents the value of the autocorrelation function, ranging from -1 to 1. Bars extending above the x-axis show positive correlation, while bars below indicate negative correlation. The length of the bar indicates the strength of the correlation.

A significant autocorrelation in a series also strongly suggests that the series is not random.

Confirming the observations from the correlograms and the PSDs, the ACFs show the strong sinusoidal patterns hidden in the data, especially for Sun, Mercury, Venus, Mars, Saturn, and Pluto but importantly include a way to see that these sinusoids likely are significant beyond white noise. Every special point's ACF shows such significant hidden waves within.

Table 5: Autocorrelation Functions of Filtered Data with Confidence Intervals





2.3.E Discrete Fourier Transforms (DFT) find strongest wave periods for filtered data relative to each special point.

The Fourier Transform (FT) is *the* fundamental concept in signal processing and series analysis. It can reveal the periodic components and frequency characteristics of a signal in a dataset. (Smith, 1997)

The Fourier Transform is a mathematical operation that transforms a function (here an angular degree signal) from its original domain (degrees) into a frequency domain. The result tells us the strength and associated period of each frequency component in the original function. In practice, when dealing with discrete data (like ours), one uses the common Discrete Fourier Transform (DFT), as do we.

In the context of periodicity detection: peaks in the magnitude of the Fourier Transform represent predominant frequencies in the original signal. The locations of these peaks tell us the frequencies of periodic components. A larger amplitude indicates a stronger presence of that frequency in the original signal. The related periods of the Fourier Transform give information about the shifts or lags of the sinusoidal components relative to the start of the observation, and so the DFT confirms the ACF results.

Moreover, highest magnitude peaks are all at conventional astrological angles which are indicated in both bold and italic. So, 0° of angular separation is the same as 360°, namely a conjunction, 180° is an opposition, 90° is a square, *et cetera*.

Table 6: Discrete Fourier Transform Analysis of Data with Top Peak Periods, Astrological Angles and Divisors

Relative Special Point	Top Six Peak ° Periods (Determined by DFT) Ordered by Highest Amplitude First	> 1 Divisor Beyond White Noise (Determined by ACF) within 1°
Mesarthim	***0***, ***72***, 16, ***90***, 16, ***120***	yes, yes, yes, yes, yes, yes
Sun	***0***, ***180***, 16, ***60***, ***9***, 7	yes, yes, yes, yes, yes, yes
Moon	***0***, ***180***, 6, ***120***, ***10***, 11	yes, yes, yes, yes, yes, yes
Mercury	***0***, ***180***, ***18***, 14, ***90***, ***9***	yes, yes, yes, yes, yes, yes
Venus	***0***, ***180***, 16, ***120***, ***90***, ***36***	yes, yes, yes, yes, yes, yes
Mars	***0***, ***180***, ***120***, ***33***, ***90***, 6	yes, yes, yes, yes, yes, yes
Jupiter	***0***, ***36***, 7, ***72***, 16, 12	yes, yes, yes, yes, yes, yes
Saturn	***0***, ***90***, ***120***, ***180***, ***72***, ***10***	yes, yes, yes, yes, yes, yes
Uranus	***0***, ***120***, ***10***, ***90***, 13, ***10***	yes, yes, yes, yes, yes, yes
Neptune	***0***, ***72***, ***90***, 17, ***45***, ***60***	yes, yes, yes, yes, yes, yes
Pluto	***0***, ***120***, ***180***, ***90***, ***72***, ***30***	yes, yes, yes, yes, yes, yes

2.3.F These predominant periods are all astrologically meaningful angles.

As seen in the above Table 6, most astrologically significant angles are represented: 120°, 90°, 72°, 60°, and 36° periods are easily recognizable by astrologers as trines, squares, quintiles, sextile, and deciles, but there are some astrologically more minor but meaningful angles that are not represented in our data (e.g., semioctile, etc.) and some extra or non-standard ones, namely at 17°, 16°, 14°, 13°, 12°, 11°, 7°, and 6° periodicities.

The latter group makes sense as part of golden angles, angular properties based on the golden ratio.

For now, these calculations ask the reader to know what a golden angle is. (See section one for more about these golden angles and their near ubiquity in nature, including in some astrologers' work.) The only ones we need to complete explanation our data's behavior are G3 and GC3.

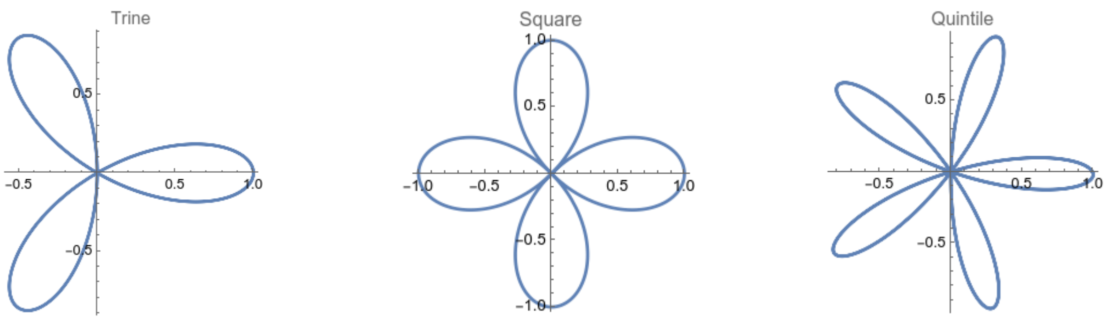
Golden Angle G3 = 360 x (golden ratio - (1 - golden ratio)) = 360 x (0.236068), rounded to 85, with its squares. The complete set is 85°, 175°, 265°, and 355°.

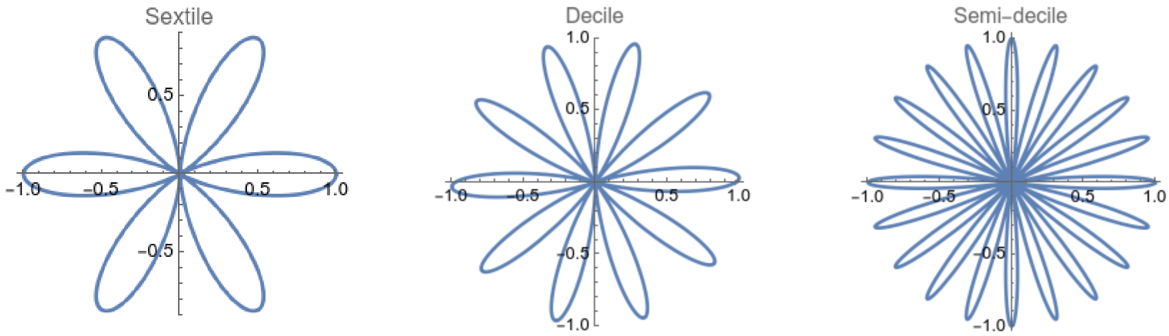
Golden Angle GC3 = 360 x (golden ratio) = 360 x (0.618034), rounded to 222, with its squares. The complete set is 42°, 132°, 222°, and 312°.

So, for example, 85 = 17 times 5, so 17 is called a divisor of 85, and the periodicity wave of 17° which was found reproduces the peaks of the 85° golden angle wave of G3, much as the square angles include oppositions or the semidecile angles include the decile ones. (Table 7)

Depictions of some of the main angles in our data are below, using the standard mathematical convention of graphing in which zero degrees is to the right, and the degrees increase counterclockwise.

Table 7: Trigonometric Examples of Astrologically Significant Periods Seen in the Data





An aside: when graphed by equivalent trigonometric equations, as was done here, one can imagine why the astrological orb for a trine is bigger than that for a quintile, for example, for the relative tangential widths of the petals of the graphs correlate commensurately.

Similar graphs of all angles found in the data, including golden angle divisors, are available. (Oshop, 2023)

We were surprised by the results of the automated DFT computations for the eleven special points. We were not sure we would see signals in the data at all. We certainly did not expect that **only astrologically significant periods would dominate the signal analysis**, and we did not expect the secondary prominence of only the golden angles.

The more minor astrological angles that are missing in Table 6 may still be in the DFT but are not the top six most amplified signals per celestial reference point.

The following table rearranges Table 6 to focus on wave period and includes the classical nature and degree orb for the higher degreed ones.

Table 8: Astrological Angles Seen in the Data with Natures, and Orbs

Period (°)	Astrological Angle(s) Factored Within 1°	Within Top Six Amplitudes for Special Relative Point	Classical Astrological Nature	Classical Astrological Orb (°)
360 (0)	Conjunction	Mesarthim, Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto	Varies	0 to 9
180	Conjunction, Opposition	Sun, Moon, Mercury, Venus, Mars, Saturn, Pluto	Disharmonious or Dynamic	0 to 9
120	Conjunction, Trine	Mesarthim, Moon, Venus, Mars, Saturn, Uranus, Pluto	Harmonious	0 to 9
90	Conjunction, Opposition, Square	Mesarthim, Mercury, Venus, Mars, Saturn, Uranus, Neptune, Pluto	Disharmonious	0 to 9
72	Conjunction, Quintile	Mesarthim, Jupiter, Saturn, Neptune, Pluto	Harmonious	0 to 1
60	Conjunction, Opposition, Trine, Sextile	Sun, Neptune	Harmonious	5
45	Conjunction, Opposition, Square, Octile	Neptune	Stimulating, challenging	2
36	Conjunction, Opposition, Quintile, Decile	Venus	Not given	Not given
33	Undecile	Mars	Not given	1
30	Conjunction, Opposition, Trine, Sextile, Semisextile	Pluto	Sensual interaction	1.2
18	Conjunction, Opposition, Square, Quintile, Semidecile	Mercury	Not given	Not given
17	Golden Angle G3	Neptune	Not given	Not given
16	Golden Angle G3	Mesarthim, Sun, Venus, Jupiter	Not given	Not given
14	Golden Angles G3, GC3	Mercury	Not given	Not given

13	Golden Angle GC3	Uranus	Not given	Not given
12	Golden Angle GC3	Jupiter	Not given	Not given
11	Golden Angle GC3	Moon	Not given	Not given
10	Conjunction, Opposition, Square, Trine, Sextile, Semisextile, Trigintasextile	Moon, Saturn, Uranus	Not given	Not given
9	Conjunction, Opposition, Square, Quintile, Semidecile, Quadragintile	Sun, Mercury	Not given	Not given
7	Golden Angles G3, GC3	Sun, Jupiter	Not given	Not given
6	Golden Angle GC3	Mars	Not given	Not given

Astrologically classical (Tropical) natures and orbs were sourced online. (Astrodienst, Wikipedia)

2.3.G Summation of major planets and luminaries to the start of Tropical Aries compares to Gauquelin sectors as do minor planets.

Considering the effects of a hypothetical wave A with a wave B is as easy as adding their series values together. (Oppenheim et al., 1997) Similarly, we can algebraically derive all the waves of interest in Table 9 which are not of minor planets but instead the *major planets and luminaries* to 0° of Tropical Aries.

Taking a 30-degree moving average of the aggregate news-count data for degree-angles of just the luminaries and the planets to the start of Tropical Aries, using an appropriately sized reference circle for convenience and comparison (of same radius 0.01 for each image except the summed one which has a radius of 0.02), one ultimately gets something like the famous Gauquelin sectors image shown in Figure x.

Each image in Table 9 has been rotated to reflect zero degrees to the left per Tropical astrological convention such as was used in making the Gauquelin image. Degrees increase in a counterclockwise fashion for all. The plot of the resulting summation is not a perfect match to the Gauquelin output, but certainly the comparison is something to consider.

A potential explanation for the slight visual difference is that the planet- and profession-specific datasets for Gauquelin sectors represent far less than 5,000 datapoints all-told and thus may be insufficient for high precision summary plots. Our 351,190 datapoints in contrast allow for plotting not just 12 sectors but 360 degrees of high accuracy with low error rates. (Oshop, 2023)

Note that every one of the planets, Sun, and Moon contributes to the summation graph. The summation is not just the putative effect of Mars on athletes, for example, but rather the total of all the effects of all ten astrologically dominant solar system features (Sun, Moon, major planets) relative to zero degrees of Tropical Aries, another potential explanation for the slight change in appearance. The lunar nodes also from the start of the study were not included as special relative points. This too may contribute to the difference.

Much more complete information is available online for these Gauquelin sectors that are so significant in astrological research history in the West in the last seventy years. (New Alchemy Press)

Table 9: Gauquelin Effect Analysis to Tropical Aries

Gauquelin Term	Signal to Start of Tropical Aries

Sun Effect

Moon Effect

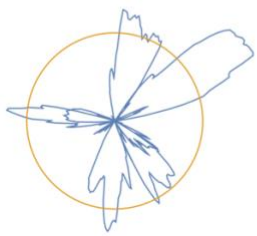
Mercury Effect

Venus Effect

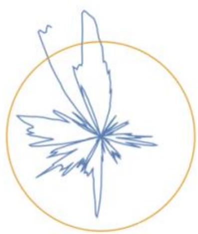
Mars Effect

Jupiter Effect

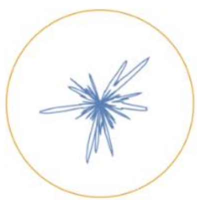
Saturn Effect



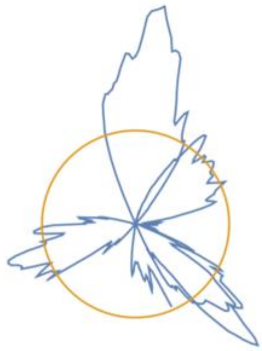
Uranus Effect



Neptune Effect



Pluto Effect



Sum of all the above

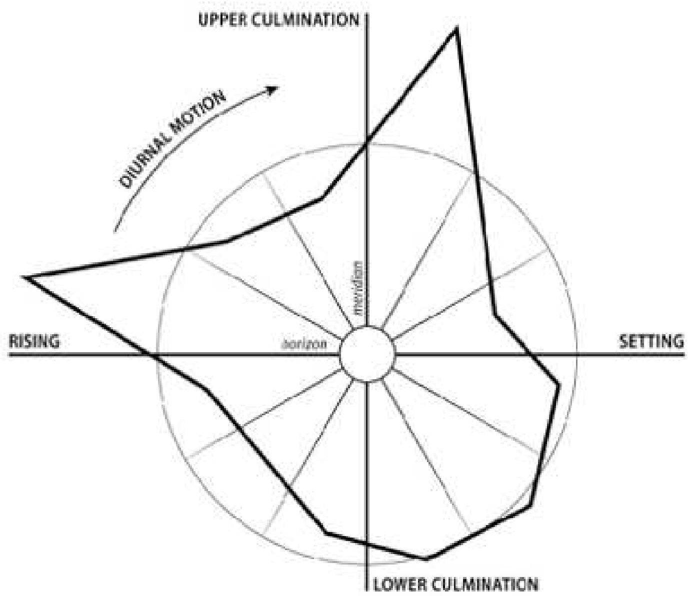
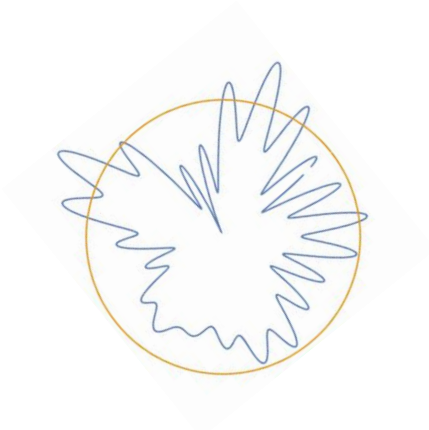
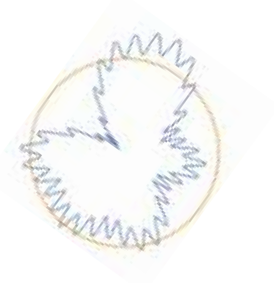


Figure 3: The Gauquelin image (Guinard, 2021).

Similarly, the aggregate minor planet plot to 0° Tropical Aries also exhibits Gauquelin-like behavior as does much more loosely the sum of minor planets relative to the major planets and luminaries. (Table 10) The latter rather makes sense as the Gauquelin sectors are defined as astrological angles not *to* the major planets and luminaries but rather to 0° Tropical Aries.

Table 10: Combined Minor Planet Effects Relative to Tropical Aries

Minor planet effect (sum of minor planets relative to 0° in Tropical Aries), yellow radius 0.05	
Sum of minor planet effect relative to the major planets and luminaries, yellow radius 0.011	

However, there is some contemporary astrological research work that suggests that major planet aspects *to* the Sun can enhance the meaning of the Sun with its allied implications of fame and power. (Tarvainen, 2022)

3. General discussion

Our study encompassed 1,211 alphabetically named minor planets, examining two specific parameters. The orbital position relative to any fixed zodiac point, the Sun, Moon, and planets is a measured parameter that belongs in the domain of physics. The proper name of a minor planet though is a qualitative attribute that carries meaning, serving a linguistic purpose. We measured the daily count of news articles in Google News that contain the minor planet name.

Our data source was news articles, as made available by Google News. The content of news articles is, to a significant extent, a reflection of and often a creator of salient events and discussions that take place around the time of their publication. The presence of a term in a news article that matches a minor planet's proper name could relate to astronomy, but in most cases, it references something or someone bearing the same proper name.

We can safely assume that the average journalist’s or publicist’s choice of words is not informed by detailed knowledge of the orbits of named minor planets. Given our data analysis focuses on quantitative factors rather than subjective astrological interpretations, in that we simply count the number of articles containing our random list of minor planet names, normalize them, and take the average over each degree of the 360 in the zodiac, our dataset might exhibit an astrological structure.

Astrologers can recognize several patterns we identified in our data. Some patterns suggest a relation with patterns that were found in earlier research by others, such as the Gauquelins and Landscheidt.

There is some possibility that our visual Gauquelin sector analogs are similar by chance. Our response is that, as substantiated in general by this paper, astrology works but in an analogous fashion, via principles of “association by similarity”, i.e., Jungian synchronicity, as an up-and-coming general philosophy of both conventional physics and conventional metaphysics, through what is called correlative thinking. [ref Kastrup book & correlative thinking book & our other paper in this journal]

Astronyms and keywords

A lot of astrological research is based on the use of keywords that are thought to be related to certain astrological variables, usually according to a tradition or according to authors of popular textbooks. In the present study we bypass keywords.

Until astrologers find a method to isolate and describe objectively the qualities of individual astrological variables (a daunting future task but perhaps accessible by combining wave analysis and machine learning), the connection of most keywords to the major planets is necessarily based on heuristics, whether from millennia-old traditions or more recent opinions.

Since the minor planet realm offers a plethora of official astronyms (names of celestial bodies), we can use these as our semantic starting point. The upshot is that we bypass a hermeneutic stage, so to speak: unlike keywords, astronyms are astrological primitives.

The deep significance of astronyms

When we say that astrology tries to decode and interpret “a great natural language of the sky”, astronyms are in a very literal sense a part of that sky-language. We might even think of the minor planets as a writers’ collective that creates dynamic texts.

Onomastically, proper names of minor planets – and all astronyms for that matter – don’t differ significantly from other categories of proper names. (Langendonck, 2007). We can differentiate between references to people, places, mythological characters and so on. If needed, there are additional orbit-based categories like Centaur, Plutino or scattered disk object. Other than that, at first glance, proper names of minor planets seem to function quite normally, at least in a linguistic sense. The main differences are:

1. Astronyms refer to celestial bodies which also happen to be part of the astrological sky "Above".

2. Minor planets are often named after people, places, organizations, and so on. This means that typically an already existing proper name is being "reused" so to speak. Consider the Tyson minor planet, for example.

3. Astronyms are conventionally understood to be retroactive, signifying things from the sky before an astronym was created.

Most astrologers who are specialized in minor planets observe that minor planet names (including Pluto) also "work" retroactively, in the same way that Uranus and Neptune are thought to "work" retroactively, meaning that astrologically relevant name-based correlations can be observed by studying the positions of minor planets *before* the moment of their actual discovery (and therefore also before their name is officially confirmed by the Working Group of Small Bodies Nomenclature (WGSBN) of the International Astronomical Union). The JPL Planetary and Lunar Ephemerides DE440 and DE441 make further research into this potential "acausal anomaly" available—at least in theory. (Tarnas, 2006) (Park, 2021)

This raises a multitude of questions, for example about the implications and power of the celestializing of a name.

4. The language, the text, of the sky may be quite malleable and personal. Our results hint that the astrological firmament is essentially continuous in nature. In other words: who decides whether Pluto is a planet or not? [reference of the guy's blog who declared in the IAU that Pluto is not a planet] What is the relative importance of Ceres, Eris, Sedna, Chiron, Pholus or Nessus? If we allow arbitrary categories and demarcations, arbitrary words, to shape our thoughts and theories about the astrological sky above our heads, much as we choose specifically and particularly but from a vast array of words to communicate, we can say the "Above" (in the ancient maxim of "As Above, So Below") changes as the sky—and we—speak.

Means and Meaning

The above depicts a synergy of language in news and mathematics via signal analysis which forms a natural linguistics. As an example of cosmic linguistics becoming factual language, we may turn to one of the root languages, Sanskrit, that weaves the fabric of this paper, English. On *acausal salience*, on the unified means by which we do things and the meaning ascribed to them, a single word of ancient Vedic philosophy neatly encapsulates them together: *artha*.

Artha is so important to one of the living, oldest, extant cultures of humanity that it is one of only four anchors of existence, four "pillars of life", within it. Sanskrit dictionaries refer to passages from the *Rg Veda*, *Caraka Samhita*, and other very old texts to define artha thus and as means and meaning. (The other three pillars of life are *dharma*, the principle of coherence and support, *kama*, the principle of desire, and *moksa*, the principle of liberation.)

The word artha itself comes from the Sanskrit *rtu* from which we get the English words of ritual, rhythm, rhyme, and art. Rtu also refers directly to cycles of nature, such as the yearly seasonal cycles of weather and monthly menses cycles of women, the timing of which are connected to the travels of the Sun and the Moon. Artha is also related to *atharva* and *artava*, Sanskrit words connected to magic and priest-magicians and to women in general, respectively. One of four *vedas* is the *Atharva Veda*. A more cautious etymology even connects rtu to the word arithmetic.

So, the feminine, the ritualistic, the cyclical, rhythmic, magical, and artistic are in essence linguistically all of a piece, and all are related to this same Jungian idea of acausal salience, of unification of means and meaning (two words that share a root even in English): a unification that is supported by the data here and our subsequent wave analysis, by our decomposition of some cycles of nature to their essential rhythms, and the resulting substantiation of the basic language of **astrology as an art *et al.* but of high precision, accuracy, and confidence**. The bridge between science and art has been shown.

4. Goals for the future

Above, we have mentioned a few new avenues of study in their appropriate sections.

We would like more data collection to pursue open-access and multiple sources to establish interesting correlations more objectively. It was a pity we had to stop collection at 290 days when we hoped to collect data for five years; as well, the single source introduces some uncomfortable dependence on a single outlet.

We would admire a concerted, unified effort; for example, by looking at some compelling public data, such as crime data; often high precision and made available by regional governments. Their very accessibility may make them a viable choice for a more collective, global, and universal effort.

The task of isolating the (minor and major) planets to study their meaning may seem at present boggling, but we accept the challenge; in some ways we are in a situation akin to the 1800's with Mendelian genetics, where we must use math to isolate a causative factor. This is not unheard of in science; in fact, it is the usual case.

An avenue of approach to test astrological keywords is through astrologically structured, planetary neural nets, one for each name, to sift through meaning of writings as input and worldly events as output to see if the astrological textbooks are at all empirically right. Other contemporary researchers are taking this approach with biographical information and personal astrological charts. (Godbout & Coron, 2023) These same studies ultimately computationally derive the Placidus ninth and twelfth houses that constitute peak Gauquelin sectors as being effective in (re)creating chart owner biographies.

5. Conclusions

Of the five astrological assumptions introduced, our data and signal analysis offer support to four.

Assumption 1. *When assessing the semantic potential of the firmament, the positions of astrophysical bodies in relation to the Sun and Moon are relatively important as bigger and brighter astrophysical events are more significant in semantic potential. [Unsupported.]*

This is a fundamental assumption that initially formed the basis for the design of our experiment. These angles of minor planets to the eleven celestial bodies are the independent variables that are measured in our data, and all produce significant results. (Table 2)

When assessing the semantic potential of the firmament, the positions of minor planet bodies in relation to the Sun and the shinier bodies of Mercury and Venus give the strongest signals (PSDs).

However, the second most powerful signal group includes the dim Mars, Saturn, and Pluto. (Table 4)

Also, when we calculate the ACF for our data (Table 5), but relative to the Moon, the result is closest to noise without being quite noise. This is not to say that the Moon is somehow a "less important" astrological variable than the Sun. After all, brightness for the Moon varies across its 28 day or lunar cycle. (This offers another avenue of further study: to see if there are more, clearer, and less noisy news article appearances when the Moon is bright versus when it is new. As well, the qualities of the news articles may differ when the Moon is bright than when it is not.)

So then, we cannot claim support for assumption one from our data. In fact, our conclusion here instead supports a counterclaim to the meta-concern offered by some astrologers against the use of minor planets, namely that they are too dim and small. Our conclusion here is consistent with the idea that minor planets are *not* too dim and small to include in astrological meaning-making.

Assumption 2: *The semantic potential of any individual celestial body may be related to notable embodied metaphors, to its proper name, and to the symbolic or associative potential of that name. [Supported.]*

The dependent variable in our study is the quantitative appearance of the proper name of the minor planet in cultural documents of worldwide news in the day.

What we did find was that these minor planets' names do appear more often in the news as their namesakes travel across the zodiac in astrologically notable angles to major planets. (Table 6)

Our results thus show that the names "work" in minor planet astrology. This adds lots of new variables to the astrological toolbox. The fact that there are thousands of named minor planets, within a greater collection of hundreds of thousands of minor planets (many of them merely tiny little rocks in space), even raises questions about the reach of physical explanations for astrological phenomena in general. See the following related article by us in this journal.

Assumption 3: *Exact harmonic angles between celestial bodies often point to peak levels of semantic modulation and to stronger "effects." [Supported.]*

Results of our successful test of Assumption 2 are all within an orb of 1 degree. (Table 6, Table 8)

Assumption 4: *Each harmonic angle has its own modulatory quality or effect. [Supported.]*

This assumption is consistent with the stronger signal amplitudes in the Discrete Fourier Transforms for example at 90 degrees than 30 degrees and at 30 degrees than 3 degrees, even though 90 is a multiple of 30 and 30 of 3. (Table 6) It is not just that the bigger-degreed cycles are always of higher amplitude than the smaller factor values. Note for example in Table 6 that for Jupiter the 36-degree cycle is stronger than the 72-degree cycle. This behavior would be expected with differing effects. However, to deduce the exact qualia of the different degreed rhythms would likely require diagnosing the qualities of the differently supported input texts. Recent developments in computer science, such as embeddings, would allow this process to take place in bulk.

Assumption 5: *The semantic potential of any celestial body is continually being modulated by the semantic potentials of other celestial bodies. Because of constantly changing relative positions, semantic modulation is a dynamic and complicated process. [Supported.]*

To form the Gauquelin image after all and acquire its astrological salience, we needed to *add* the different angular waves for all the major planets or minor planets to 0° of Tropical Aries. Addition is a type of modulation of one wave by another. Participation of all the celestial reference points was needed. (Table 9, Table 10)

Summary

In summary, we conclude that indeed, names work, and the "Above" is changing.

Our research has illuminated intriguing connections between the orbital dynamics of minor planets and their linguistic representation in media narratives. This exploration, bridging the realms of astronomy, astrology, and linguistics, suggests a complex interplay between celestial mechanics and human cultural expressions. Our findings not only reinforce the concept of a "cosmic semiotics" but also open the door to a more nuanced understanding of how celestial phenomena might be symbolically integrated into our collective consciousness.

The correlations observed between minor planet orbits and their frequencies in news articles challenge us to consider broader implications. They point towards a potential subconscious resonance between the movements of celestial bodies and human cultural output, hinting at an underlying symbolic language that permeates our daily lives. This interplay between the cosmos and human expression could reflect our deep-rooted connection to the universe, a connection that might manifest in ways we are only beginning to comprehend.

Furthermore, our study invites further interdisciplinary research, encouraging a dialogue between the scientific community and fields traditionally seen as disparate, like astrology and linguistics. By continuing to explore these intersections, we may uncover more about the mysterious ways in which the macrocosm of the universe mirrors and influences our microcosmic human experiences. Ultimately, this research is a step towards demystifying the cosmic tapestry of which we are all a part, revealing a more interconnected and symbolically rich universe than previously understood.

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