

GALILEO'S ASTROLOGY

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Galileo was a *mathematicus*, like Kepler, a term which had a threefold meaning as referring to mathematics, astrology and astronomy. Favaro in 1881 composed his essay, *Galileo Astrologo*, which concluded:

It seems to me impossible to have the slightest doubt that Galileo was involved with astrology, indeed, that he was famous for his great ability in that art, so that distinguished people consulted him with complete confidence, in many cases asking for horoscopes and predictions.¹

The letters by Galileo to his astrological colleagues have been lost and we only have the replies, as likewise the most famous charts composed by him have been lost,² however some twenty-five charts drawn up by him do remain, plus several instances of his chart analyses. The book from which he learnt his astrology while at Pisa may have been Porphyry's *Introductio in Ptolemaei opus de effectibus astrorum...* of which a copy annotated in his hand remains at Florence.³

This vital dimension was entirely omitted in Brecht's play *Galileo* as it was likewise in Koestler's classic, *The Sleepwalkers*. Giorgio de Santillana,

¹ Antonio Favaro, "Galileo astrologo secondo i documenti editi ed inediti", in *Mente a Cuore* (Mind & Heart, a periodical) 1881, Trieste, pp.1-10, 4.

² Catalogue entry by Germana Ernst in *Opuscoli Astrologici* ms Galil. 81, BNF 1980 exhibition: 'the most famous charts have been lost.' Galileo's *Astrologica nonnulla* comprises 48 pages. BNF ms Galilei n.81; *Opere*, 19, pp.205-220.

³ Favaro, op. cit. (1), p.3.

in an otherwise sympathetic biography of Galileo, characterised the Chair (lectureship) at Padua University which he accepted in 1592 as follows:

the chair of “mathematics” then covered the teaching of geometry, astronomy, military engineering, and fortification.⁴

Santillana has here brazenly omitted a major traditional function of the *mathematicus*, probably the most important at Padua, namely the teaching to medical students of how to cast a horoscope. The latter would be set up for the onset-time of a disease, to indicate the appropriate remedy. As Westman has observed in this context, “... astrology combined the predictive function of the astronomer with the explanatory role of the natural philosopher in the person of the academic physician...”,⁵ pointing out that the University of Padua had an especially strong tradition in this regard. We have letters of Galileo from this period, stating that the majority of his pupils were medical students.⁶ Favaro has discussed this long tradition of medical astrology at Padua, one of Europe’s oldest universities.⁷ By way of comparison, Jean-Baptiste Morin at Paris university held the title:

Doctore Medico atque Regio Parisiis Mathematicum Professore

indicating the importance then attached to medical astrology. There is, in the whole of Santillana’s opus, but one reference to the subject, made quite casually: that, late in Galileo’s career, a slander was cast against him by his arch-enemies the Jesuits, averring:

that Galileo had astrologically predicted the death of the Pope in 1630,⁸

suggesting that he enjoyed some renown for his practice of the art.

Astral Compulsion

The year 1604 saw Galileo’s first and little-known summons by the Inquisition: In April of 1604, a young man from the Venice district Sig. Silvestro

⁴ Giorgio de Santillana, *Processo a Galileo*, Milan 1964, trans. *The Crime of Galileo* Chicago 1955, p.3.

⁵ Robert S. Westman, “The Astronomer’s Role in the Sixteenth Century: a Preliminary Study”, *History of Science*, 1980, 18, 105-147, 118.

⁶ Galileo to the Riformati, U. of Padua, 9th March and 4th November 1609, *Opere*, 2, 236-7 and 264-5.

⁷ Favaro, A., *Galileo Galilei e Lo Studio do Padova*, Florence 1883, Ch. 4, “Le Matematiche nello Studio di Padova prima di Galileo”.

⁸ Santillana op. cit. (n. 4) p.286.

was employed in Galileo's household as his ammanuensis. He made a deposition with the courier archivist of Padua, a three-point testimony against the 39-year old Galileo: that he kept quarreling with his mother, who was objecting to his keeping a mistress plus three children in Padua; that he was failing to attend mass, and that he was propounding a doctrine of astral determinism to his wealthy clients. No-one could escape the influence of the stars, he was alleged to be telling them, and it was therefore as well to know one's own future from a chart-reading.

Galileo was accused of undue fatalism in his forecasts. For example, Silvestro testified that one reading was for "a man who would live, he said, for another twenty years, and he maintained that his prediction was certain and would inevitably come to pass". Signor Silvestro testified that he never saw Galileo go to mass or confession, but instead "he would go to that Venetian whore of his, Marina". However, Silvestro denied that he had heard any heresy or unbelief from Galileo. This provoked the following recorded exchange:

Q: You said before that in the nativities that this Galileo makes, he calls his predictions certain; this is heresy. How then can you say that he is a believer in matters of faith?

A: I know that he said that and that he calls his predictions from the nativities certain, but I am not aware that this has been declared heresy.⁹

The Church was keenly opposed to such fatalism. On April 22nd, 1604 the Inquisition formulated its charge against Galileo Galilei, lecturer in mathematics, whereby he was accused of:

haver ragionato che le stelle, i pianeti at gl'influssi celesti necessitino¹⁰

— he had reasoned that the stars, planets and celestial influences were able to determine the course of events. It also accused him of "living as a heretic". These were "charges of the utmost gravity". Although Galileo was interrogated at Padua as a heretic over this, the charge was not pursued, and never passed into the hands of the Holy Office in Rome: he was evidently protected by his holding the chair of mathematics at Padua. The Church did not wish for trouble with the university.

This summons was discovered by the Franciscan Friar Professor Antonino Poppi. He found these in the Sartori archives in Padua, and could hardly believe it. Then in 1990 he located two sworn denunciations in the Venetian State Archives (Padua being in the province of the Veneto), listing the chief points of the accusation, as supported the Padua documents.

⁹ "La Denuncia Contro il Galilei", in Antonino Poppi, *Cremonini e Galilei Inquisiti A Padova Nel 1604*, Nuove Documenti D'Archivo, Padova 1992, pp.51-4, 54.

¹⁰ Ibid, p.43.

The Qualities of Jupiter

In 1609 Galileo moved to Florence. His revolutionary bestseller, *Sidereus Nuncius*, ‘The Message of the Stars’ appearing in March, 1610, opened with an eloquent account of the traditional qualities assigned to Jupiter:

So who does not know that clemency, kindness of heart, gentleness of manners, splendour of royal blood, nobleness in public functions, wide extent of influence and power over others, all of which have fixed their common abode and seat in your highness –who, I say, does not know that these qualities, according to the providence of God, from whom all good things do come, emanate from the most benign star of Jupiter?¹¹

This indicates not merely that Galileo did not doubt the matter, but that he could hardly imagine anyone else doubting it. The text follows with an account of Jupiter’s position at the top of the chart of his young patron, Cosimo de Medici, the Duke of Tuscany:

Jupiter, Jupiter I say, at the instant of Your highness’s birth had already passed the slow, dull vapours of the horizon and was occupying the Midheaven, from which point it was illuminating the eastern angle, from that sublime throne saw the most happy delivery and all the splendour and magnificence of the newly-born diffused in the most pure air...

The Latin *Orientalēque angulum sua Regia illustrans* translates literally as “Illuminating the Eastern angle of which he [Jupiter] is the ruler”: it alludes to Cosimo de Medici’s rising sign (‘orient’) Sagittarius, as traditionally belonging to Jupiter,¹² (*sua Regia* i.e. under his rulership). Galileo’s text continued,

...in order that your tender body and your mind might imbibe with their first breath that universal influence and power,

alluding to the condition of the horoscope at that instant, as dominated by the planet Jupiter. This is Galileo’s view of how astrology worked.

A query was put to Galileo by Piero Dini in Rome concerning the “Medici sidera”. How could one ascertain what their influence was upon mankind? Galileo replied on 21 May, 1611 with a letter occupying eleven pages

¹¹ Van Helden’s translation of Galileo’s *Sidereus Nuncius* 1610 is here used (Chicago, 1989, p. 31), except that ‘most,’ as: ‘most benign star...’ has here been inserted (*ex benignissimo Iouis Astro ... emanare*).

¹² For Germana Ernst’s discussion of Sagittarius as Cosimo II’s rising sign, see: “Aspetti dell’Astrologia e della profezia in Galileo e Campanella” in *Novita Celesti e crisi del Sapere*, Ed. P. Galluzi, Florence 1984, pp. 258-266, 264.

of Favaro's *Opere*. His arguments for the reality of the *Medici sidera* there appear as indissolubly linked with the question of their influence. It would not seem right to assert that "these Medician Planets lack all influence, wherein the other stars abound". He drew a comparison with different plant species which have their "qualities, virtues and effects" to be explored. Galileo conjectured how the little planets might affect us, contrasting 'superior' and "inferior" causes:

If, therefore, of the inferior causes, those which arouse boldness of heart are diametrically contrary to those which inspire intellectual speculation, it is also most reasonable that the superior causes (if indeed they operate on us) be utterly different from those on which courage and the speculative faculty depend; and if the stars do operate and influence principally by their light, perchance it might be possible with some probable conjecture to deduce courage and boldness of heart from very large and vehement stars, and acuteness and perspicacity of wit from the thinnest and almost invisible lights.¹³

Dynasty and Destiny

Sidereus Nuncius was dedicated to the young Grand Duke Cosimo di Medici, sovereign of Tuscany. As the book was proposing that the new moons of Jupiter should be named after the Duke, his natal chart had relevance, included in the original manuscript of *Sidereus Nuncius* in Florence.¹⁴ Its purpose was to establish that the Duke's chart did indeed have such characteristics as he had claimed.

Jupiter was traditionally the royal star, and the 18-year old Cosimo's grandfather Cosimo I was said to have especially identified himself with Jupiter as head of the Roman pantheon of deities.^{15,16,17} The Medici court palace, the *Palazzo della Signoria*, had been filled with frescoes on this classical Olympic theme, as aided his usurping of power over other prominent families who had long governed in uneasy coalition.¹⁸ It was a court which took astral mythology very seriously, indeed no other ruling house had made more public and consistent use of astrological symbo-

¹³ *Opere* XI pp.105-116, 111; translation by Mike Edwards.

¹⁴ Guglielmo Righini, "L'Oroscopo galileiano di Cosimo II de' Medici", *Annali dell'Istituto e Museo di Storia della Scienza di Firenze*, 1976 vol.1 pp.28-36, pp.31, 36.

¹⁵ J. Cox-Rearick, *Dynasty and Destiny in Medici Art*, 1984, p.215.

¹⁶ Mario Biagioli, *Galileo, Courtier: The Practice of Science in the Culture of Absolutism*, Chicago, 1993, p.107.

¹⁷ R. S. Westman has disagreed, averring that "The alleged connections between Jupiter and Cosimo I... are at best tenuous": "Two Cultures or One?" *Isis* 1994, 85, 79-115, 103, n.76.

¹⁸ Dava Sobell, *Galileo's Daughter*, 1999, p.30.

lism¹⁹ Biagioli has shown how these mythologies ‘constituted the “master narrative” that informed that imagery used in public political ceremonies and festivals as well as the subject matter of court poetry, theater, painting and opera.’²⁰

The young Cosimo had three brothers, so that the four new stars were shared out, one to each. It was no mere coincidence, as Galileo explained in his dedication of *Sidereus Nuncius* to the young Cosimo, that “bright stars offer[ed] themselves in the heavens” immediately following his enthronement. The four stars had been “reserved” for the Medicis. The *Nuncius* dedication was a political use of astrological symbolism. Jupiter in Cosimo de Medici II’s horoscope held a dominant position, being clearly the strongest planet. It held a commanding position at the top of the horoscope (at the Medium Coeli or MC, the highest point of Jupiter’s diurnal arc), as was especially significant for a state ruler –not rising as Biagioli averred; it formed major aspects to two planets (Mars and Saturn) plus the ascendent, and thirdly, his rising sign (‘horoscopos’) was Sagittarius, ‘ruled’ by Jupiter. Figure 1 shows Galileo’s horoscope for Cosimo II.

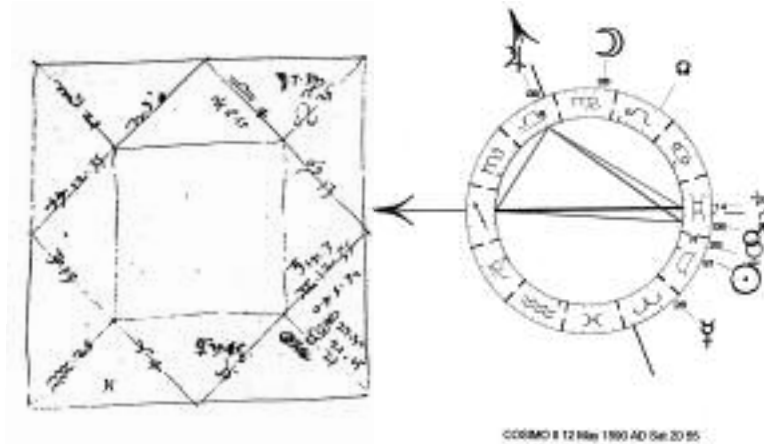


Figure 1

Chart of Cosimo II de Medici. The Court Record Office gives 12th May 1590 at one in the night, i.e. one hour after sunset.²¹ Sunset was at 7.06 p.m. that day (local apparant time), and Galileo’s initial version of the chart (Figure 2) I reconstruct as having been for 8.31 p.m., then his final vesion here shown, twenty minutes later, took 8.51 p.m. Galileo possibly used the later time in order to place Jupiter close to the Midheaven. A modern chart using the same house divisions plus the aspects formed by Jupiter (to Mars, Saturn and the ascendent) is shown for comparison.

¹⁹ Paulo L. Rosso, “Society, Culture and the Dissemination of Learning” in Pumfrey, S., Ed., *Science, Culture and Popular Belief in Renaissance Europe*, Man. U.P., 1991 p.158.

²⁰ Biagioli op.cit.(16), p.110.

²¹ Michael Talbot, “Ore Italiane”, *Italian Studies*, 1985, Vol. L, p.52.

Galileo gained in July 1610 the title of chief mathematician and philosopher to the Grand Duke of Tuscany, which meant that copies of his telescope and the accompanying *Sidereus Nuncius* were thenceforth distributed by the Medici. Later on, Cosimo III was partial to the four *stella Medici* and had an image of them placed on his chest at his funeral in 1723.²² By any standards, Galileo's ploy was awesomely successful.

Charts for his Daughters

Galileo not only drew up charts for his two illegitimate daughters, but composed character-judgements based upon them. For Virginia the elder daughter he noted that the Moon (traditionally of feminine significance for motherhood etc) was 'debilitated', and wrote grimly:

The Moon is very debilitated and in a sign which obeys. She is dominated by family relationships. Saturn signifies submission and severe customs which gives her a sad demeanour, but Jupiter is very well with Mercury, and well-aspected corrects this. She is patient and happy to work very hard. She likes to be alone, does not talk too much, eats little with a strong will but she is not always in condition and may not fulfil her promise.

In the younger daughter Livia he discerned (quite wrongly, according to Sobell²³) a more extrovert character. Her *De Ingenio* affirmed:

Mercury rising is very strong for all things, and Jupiter which is conjunct gives knowledge and bounty, simplicity, humanity, erudition and prudence.

Sobell's six-hundred page opus *Galileo's Daughter* makes no allusion to these texts, though published by Favaro, indicating how censored the topic remains.

Giovanni Sagredo

The Venetian aristocrat Sagredo consulted Galileo for astrological advice on a fairly regular basis. His analysis of Giovanni Francesco Sagredo's horoscope was generally very laudatory ("beneficent, pacific, sociable, pleasure-loving"), as derived from the positions of Venus and Jupiter:

²² Biagioli op.cit. (16) p.253.

²³ Sobell, op.cit. (18), pp.5,46: "...Galileo's strange, silent, second daughter ... [her] morbid tendency to melancholy and withdrawal..."

The ascendent falls in the Terms of Venus in her own house, surrounded by the fixed Pleiades and applying to Jupiter by an exact sextile. She is free from rays malefic to herself.

Thus, there were no ‘bad aspects’ to the ascendent. In addition, however, Galileo discerned an imbalance in the chart:

From the combination of testimonies a warm and moist temperament results, indeed a sanguine one with lack of balance because of Venus’s being the ill-balanced lady of the geniture, and the ascendent and its house, and what is more from Saturn being in opposition to the ascendent.

Sagredo was characterised in a Foreword of the *Dialogue* as “a man of noble extraction and trenchant wit”. A letter from Sagredo to Galileo requested a chart reading for a colleague, in a manner which suggested repeated, similar requests.

A propos of the tendency for oracles and prophecies to be interpreted retrospectively, the character Salviati in the *Dialogue* states:

And why do you leave out the prophecies of the astrologers [‘genethliaci’], which are so clearly seen in horoscopes (or should we say in the configuration of the heavens) after their fulfilment?²⁴

which question is followed by an immediate change of subject, to an attack upon alchemists who have credulously interpreted ancient myths as if they had encoded alchemic mysteries. There is no follow-up *as such* to Salviati’s question. Galileo is here fulminating against those who pretend to be making predictions and do so only in retrospect. One may demur before seeing this as an attack upon judicial astrology as such. That is the nearest to a criticism of astrology one finds in Galileo’s *Dialogue*.

Galileo’s Date of Birth

The birth-charts for Galileo are the *sole source* of evidence concerning his birthdate. Favaro published a collection of these, over several different dates, without indicating which were composed by Galileo. The archivists at the Biblioteca Nazionale at Florence, for a 1980 exhibition on astrological material, displayed just two charts as drawn up by Galileo for his own birth,²⁵ as depicted in Figure 2.

²⁴ Galileo, *Dialogue Concerning the two chief World-Systems*, trans. Stillman Drake, UCLA 1953 p. 110.

²⁵ BNF *Opuscoli Astrologici* ms Galil. 81, sec.XVI Cart. cc.48; reprinted in *Opere* XIX, pp. 23,4.

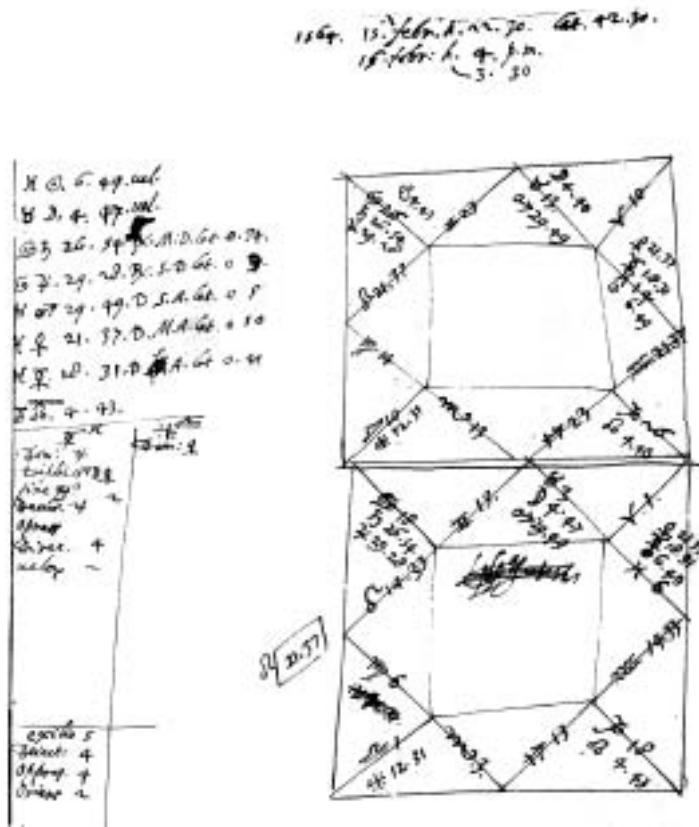


Figure 2
 Two charts for Galileo's birth by himself, 3.30 and 4 p.m on February 16th 1564, published by Biblioteca Nazionale, Florence in 1980. Planetary longitudes are identical in the two charts (except for seven arcminutes for the Moon) and are also written out at the side, together with celestial latitudes.

These two horoscopes differed by only half an hour, thereby giving a choice between different degrees of the rising-sign: at $14^{\circ}33'$ or $21^{\circ}37'$ of Leo. His birth-place Pisa used sundial time, and counted hours from sunset, whereas Padua where these charts were presumably composed had adopted the French system,²⁶ with hours measured from noon. Above the charts was written:

1564, 15 February, h 22.30. lat 42.30
 16 February, h 4 pm
 h 3.30 pm

²⁶ Michael Talbot, op.cit. (21), p.52.

The first two lines describe the same moment with the first giving the older method, which measured hours as from the previous sunset, while the second gives 'p.m.', ie hours after noon. As Favaro noted, on the second line Galileo had first written 15 February, then changed it to the 16th²⁷ –an initial error, we may conjecture, as caused confusion in futurity. His latitude for Pisa is out by just over one degree, its true value being $43^{\circ}43'$. The notion of his birthtime being the 15th February may well have come from casual readings of this old-style timing, whereby his birthtime was given as 22 hours of the 15th, i.e. *after sundown* on the 15th.

That Galileo took these charts seriously, as those of his nativity, is shown by the way he wrote out the planetary latitudes on the left, beside their longitude, as required for computing 'primary directions'. These, as we saw with Sagredo's 'primary directions' set up by Galileo, are required for looking at the course of a life. It is evident that these two charts have been carefully prepared and mulled over, with longitudes in triplicate and latitudes and the differing time-conventions compared. They are definitely by Galileo, and indicate that he was born on the 16th February, 1564, (26th February, New Style) –and not the 15th as is generally stated.²⁸ His Mercury position erred by four degrees and his Moon by one, indicating that the need for reform in astronomy had a very practical basis.

A letter of Galileo's from 1633, the year after his *Dialogue Concerning Two World-Systems* was published, to his friend Elia Diodati in Paris, alludes to Morin de Villefranche, Mathematics professor at Paris and the most celebrated astrologer of the epoch.²⁹ Having received copies of new books by Morin and Fromondo, he deplored not having known of them sooner, since he would have had 'an opportunity to say many things in praise of both.' His letter concluded by saying:

I am astounded that Morino has such an extremely high regard for judicial [astrology] and that he claims with his conjectures (which to me appear uncertain, if not very uncertain) to establish the certainty of astrology; and it would really be a wonderful thing if –as he promises– he can, shrewd as he is, place astrology in the highest position of the human sciences; and I shall wait with great curiosity to see this marvellous innovation.³⁰

Hope and irony appear as mingled in this comment. Favaro commented, "In these words we do not find the sense of absolute reproach, as others are pleased to find in them". Galileo was here casting doubt on whether astrology should be viewed as a science: traditionally, as from Ptolemy's *Tetrabi-*

²⁷ *Opere*, 19, Doc.IV. p.23.

²⁸ See Ernst, G., *op.cit.* (12) p.265 for uncertainty over the dates of 15th Feb. vs 16th.

²⁹ M. Grenet, *La Passion des Astres au XVII siecle*, Paris 1994, p.44.

³⁰ Letter of Galileo to Diodati, *Opere*, 15 pp.23-5, 24, trans. by A.Kitson.

blos, it was regarded more as an art which could never reach certainty as could the science of astronomy.

The book in question, by Jean-Baptiste Morin, had argued for the Earth's immobility using astrological arguments. Furthermore, Morin was working on a huge multi-volume astrological treatise. Would this not have been an occasion for that famous sarcasm with which Galileo decimated his opponents? Instead we hear merely of his "praise" for the book and the shrewdness of its author –hardly compatible with Favaro's notion of a scepticism as developing in mature years.

For centuries the image of Galileo has functioned as an icon of the new science he did so much to found. This has meant ignoring the real person. His biography becomes more interesting if we see him in the context of a Renaissance *mathematicus* without imposing our preconceptions upon him. French philosophers such as Descartes and Gassendi were sceptical towards astrology, whereas this had not become an issue in Renaissance Italy: there was no social context as could have supported astronomers sceptical towards astrology during Galileo's life. Only later on, in the latter half of the seventeenth century, was astrology expelled from the universities, whereby astronomy became established as a separate and independent discipline.

References

Biblioteca Nazionale di Florence (BNF), Manoscritti Galileiani, VI, Tomo VII.
Favaro Antonio Ed., *Le Opere di Galileo Galilei*, Florence 1929-39, 20 Vols.

