

Tokens of the future: comets, astrology and politics in early modern Portugal

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This paper examines a set of treatises and observational reports on comets written by Portuguese astrologers/astronomers in the late sixteenth and seventeenth centuries. Focusing on the links between natural philosophy, astrology and politics, it analyses the change in comet-based astrological predictions in Portugal. In the late sixteenth century, the appearance of comets gave rise to numerous astrological texts predicting a transcendental role for the Portuguese monarchy under the Bragança dynasty. Nevertheless, as the seventeenth century progressed, astrological causality gradually disappeared from comet treatises. Increasingly, the appearance of comets in skies afforded an opportunity to discuss only the physical nature and effects of comets, not judicial astrological forecasts. In this paper, we argue that the process of rationalising and centralising the political system together with major changes concerning conceptions of nature and new 'scientific' methods partially explain this change in astrological beliefs.

Neste artigo analisa-se um conjunto de publicações e registos manuscritos de observações de cometas escrito por astrólogos / astrónomos portugueses no final do século XVI e durante o século XVII. Enfatizando as relações entre filosofia natural, astrologia e política, este artigo propõe uma análise sobre a evolução dos prognósticos astrológicos em Portugal com base na literatura cometária. Em finais do século XVI, o aparecimento de cometas estava na origem de um numeroso conjunto de textos astrológicos prognosticando um papel transcendental para a monarquia portuguesa sob a dinastia de Bragança. Contudo, à medida que o século XVII progredia, a causalidade astrológica foi desaparecendo dos tratados cometários. De forma crescente, a observação de cometas nos céus originou apenas uma discussão sobre a natureza e os efeitos físicos destes fenómenos, ignorando-se as previsões astrológicas. Neste artigo, defendemos que o processo de racionalização e centralização do sistema político português e a difusão de novas concepções sobre a natureza e sobre os métodos 'científicos' explicam parcialmente esta alteração na crença astrológica.

IN 1688, WHEN NEWS SPREAD OF THE DEATH of the crown prince of Portugal, Dom João, whilst still in his infancy, the Jesuit António Vieira attempted to comfort Queen Maria Sofia of Neuburg by evoking the transcendental role that was supposedly reserved for the Portuguese

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Abbreviations:

BA = Biblioteca da Ajuda, Lisboa

BGUC = Biblioteca Geral da Universidade de Coimbra

BL = British Library, London

BNL = Biblioteca Nacional de Lisboa

BPE = Biblioteca Pública de Évora

monarchy under the Bragança dynasty. In his apology addressed to the queen, he stated that previous celestial phenomena and comets had revealed great political fortunes for Portugal.

That new star, born in the year of [1]604 in the same place as the comet of [1]580 was extinguished and disappeared, was a token from Heaven of King Dom João, firstborn of the Braganças, born in the same year of [1]604 to succeed king D. Henrique, who died in [1]580. This was its meaning with regard to the person and to the manner whereby he would restore the kingdom and return the crown to the Portuguese kings, which was indeed witnessed in the fateful year of [1]640. And did this same new star bear any other meaning? Two things, the greatest news the world has ever seen or may expect to see for many a year. The first was that in Christendom a new monarchy would rise and rule over the whole universe. The second was that this monarchy and its monarch would overcome and destroy the Mahometan sect and empire.¹

An early modern visionary of distinction, António Vieira was of the view that Portugal would defeat the Ottoman Empire and establish a Universal Monarchy, heralding in an era of worldwide peace under the rule of the Bragança dynasty. As Vieira saw it, there could be no doubt about the future institution of this *aetas aurea*, for celestial phenomena and comets had indicated that Portugal would be granted this transcendental role; indeed, political events had also confirmed it. The 1580 comet had foretold the death of regent Dom Henrique and the consequent loss of Portuguese independence to Spain the same year. A few years later, the new star of 1604 had signalled the birth of a crown prince who would regain the Portuguese crown. The heavenly messages had proven quite accurate, Vieira sustained, since Dom João IV had indeed reinstated political independence from Spain in 1640. Accordingly, Portugal's *Quinto Império* (Fifth Empire) would be established in the near future.

Yet there remained one nagging question, which was how new stars and especially comets could actually bring about such considerable change in the political arena. The response provided by Vieira, who was quite diffident towards judicial astrology, was that they were the direct agency of God. God was directly responsible for introducing great political change and announced His purpose through the appearance of comets and

¹ "Aquela estrela nova, que nasceu no ano de 604, no mesmo lugar onde morreu e desapareceu o cometa de 580, já vimos como foi um sinal do Céu, que apontava para el-rei D. João primogénito de Bragança, o qual nasceu no mesmo ano de 604, para suceder no lugar a el-rei D. Henrique morto no ano de 580. Esta foi a significação da pessoa e como nela se havia de restaurar o Reino, e tornar a coroa aos reis portugueses, o que tudo vimos cumprido no ano fatal de 640. E significava mais alguma cousa a mesma estrela nova? Duas cousas, e duas novidades as maiores que nunca viu, e há muitos anos espera ver o mundo. A primeira, que na cristandade se levantaria uma nova monarquia, que dominaria e seria senhora de todo o universo. A segunda, que esta monarquia e o seu monarca seria o que destruisse e extinguisse a seita e império maometano." Vieira (1959), pp. 76-77.

other celestial phenomena originated *ex novo*. However, astrologers at the time had a rather different explanation: political change was caused by the astrological effects of certain planetary conjunctions and the appearance of comets.

In point of fact, early seventeenth century astrologers did not see any discrepancy between divine agency and astrological influence. They believed that heavenly influence was twofold. God, the primary cause, presided unfathomably over human political destiny both through His extraordinary, direct interference and by means of secondary agents such as planets and comets. Additionally, these secondary causes, with their intrinsic capacity to produce effects, were thought to have a real influence on the terrestrial region and political life. Overall, astrologers did not hold with divine agency, choosing rather to focus exclusively on planetary influences, even though they recognised the existence of a superior causality. Events such as political revolts, popular uprisings or the death of a king could all be explained by celestial conjunctions, eclipses and the appearance of comets.

Early modern Portugal is a case in point. The country's political life was marked by constant turmoil from the 1570s to the 1660s. During this period, a huge number of astrological works interpreting the recent past and astrological prognoses for the country's political future were produced by the country's astrologers and messianic authors. However, by the second half of the seventeenth century, and especially from the 1660s onwards, there was a significant shift in astrology and its political use in Portugal. Astrological predictions decreased in number, they dealt much less specifically with political affairs, and they tended to produce less impressive results. This apparent decline of astrology can be seen clearly from the literature on comets. As the seventeenth century progressed, astrological causality gradually disappeared from comet treatises. Increasingly, the appearance of comets in skies afforded an opportunity to discuss only the physical nature and effects of comets, not astrological forecasts. Yet this change in attitudes towards comets' secondary causality was still accompanied by general statements on their final cause. By the late 1600s, however, such treatises had drastically reduced the role of divine agency to a mere distant warning about humankind's moral conduct. In this context, the conception of comets as God's direct handiwork was discarded together, along with the theories about the astrological influence of comets.

In this paper we analyse this process of decline. We do not aim to put forward an explanation for the fall in comet-based astrological predictions in Portugal, given that any comprehensive study into the profound changes seen in astrology in the second half of the seventeenth century would have to take into account a whole gamut of factors, a task which clearly

goes beyond the scope of the present paper. However, we would draw attention to two different factors which we argue played a crucial role in this process: increased political stability during the reign of Dom Pedro II (1648-1706) and the 'new' view of nature which gained ground in Portugal in the late 1600s.

An astrological explanation of politics: comets and celestial conjunctions

There was a consensus amongst Portuguese astrologers that the comet of 1577 had presaged the critical political events played out the following year.² The comet was unanimously taken as a portent of the ill-fated military incursion that the king, Dom Sebastião, was then preparing to Morocco. In fact, King Sebastian was captured or died in August 1578 as he waged battle against the Emir Abd al-Malik, in Ksar-el-Kebir. Together with the king, a significant part of Portugal's top nobility also died in North Africa. In Portugal, Cardinal Dom Henrique (1512-1580) was crowned under a very fragile state of affairs. There was no direct descendant to the Portuguese throne and one of the contenders was the king of Spain, Felipe II (1527-1598), who was a collateral descendant of the Portuguese king Manuel I (1469-1521). After a combination of diplomatic machinations and military manoeuvres, D. Felipe was crowned king of Portugal in 1580. The country's astrologers put all these events down to the 1577 comet, if not in their entirety at least in part. Some years later, Mendo Pacheco de Brito summed up the connection between the appearance of comets and past political events, mentioning that "in the year of 1577 another comet appeared, which was followed by the war between King Sebastian and Mulay Malik, king of Morocco, and the change of this kingdom and its union with the Crown of Castile."³

The circumstances surrounding the death of King Sebastian only went to strengthen the messianic feelings that were so widespread in sixteenth century Portuguese society. Under the rule of the Habsburg dynasty,

² The relationship between astrology and politics in the early modern period has been studied in detail by some authors such as Curry (1989), Ernst (1991) and Schechner Genuth (1997).

³ "No anno de 1577 appareceo outro [cometa], a que se seguio a guerra del Rey dom Sebastião, e de Mule Maluco Rey de Marroquos, e a alteração deste Reyno, e a união à Coroa de Castella." Brito (1619), fl. [13r]. The association of the 1577 comet with the misfortune of King Sebastian was almost a consensus amongst early modern astrologers in Portugal. See, for example, [*Notícias relativas ao cometa de 1577*], BGUC, Ms. 475, fls. 152r-152v, [*Notícia relativa ao cometa de 1577*], BGUC, Ms. 581, fl. 210r., Soares (1953), p. 90, Mexia (1619), fl. A4v., *Consideracao Astrologica sobre a coniunção Máxima e cometas passados e pronostico universal e luzitano*, BA, Ms. 51-VI-2, fls. 114-115v. A detailed report of the El-Ksar-el-Kebir battle and its historical context is given in Najera (1619), fls. B1r-B1v.

this messianic ambience took the form of a millennialist movement which is generally known as Sebastianism, whose central belief was that the king would return, reclaim the throne and lead Portugal to the Fifth Empire.⁴

Astrologers fed these messianic expectations in their prognostications. If the 1577 comet had been understood as a sign of Portugal's loss of independence, the coming celestial phenomena would rapidly be taken as indicators of an imminent Restoration. The Great Conjunction of Jupiter and Saturn in Sagittarius on 31 December 1603 is a case in point.⁵ The astrologers were in agreement as to its fundamental significance although they did differ on the timing of the manifestation of the astrological effects. Some authors simply said that within the next twenty years (1623), a "hidden king" (i.e. King Sebastian) would emerge in the western Iberian Peninsula and bring about unprecedented political change in Castile (i.e. Spain), since Sagittarius was the sign of this kingdom.⁶ Other astrologers, especially those writing after 1640, were more specific. One of them, António Pais Ferraz, held that the effects of the 1603 conjunction only became apparent in 1643, pointing to the birth of king Afonso VI (1643-1683).⁷ More complex still was the astrological calculation made by Manuel Bocarro Francês (c.1593-1662). His procedure took into consideration not only the Great Conjunction of 1603, but also the theory of change in the eccentricity of the Sun's "orbit", the great orb of Saturn (*orbis magnus Saturni*) and the comets that appeared in 1618.⁸ By considering all four elements, Bocarro Francês suggested that 1653 was the year that the Fifth Empire would commence under the rule of a Portuguese monarch.

The Great Conjunction of 19 July 1623 between Saturn and Jupiter in Leo reinforced astrologers' convictions of the imminence of new empires. In the orient, the conjunction indicated the submission of the Tartars under

⁴ On Sebastianism, see Azevedo (1984), Besselaar (1987), Hermann (1998), Pires (1971) and Torres (1978).

⁵ On the theory of Great Conjunctions and their connection with great political events, see particularly Warburg (1976), North (1980), Garin (1988), Zambelli (1986) and Lanuza (2007). The Portuguese astrologer who produced the most comprehensive treatise on Great Conjunctions was António Pais Ferraz, author of *Discurso Astrologico das Influencias da Mayor conjunção de Jupiter, e Marte, que succederà neste anno de 1660 a 8 de Agosto observada, e calculada pera o Meridiano desta Corte, cabeça de Portugal* (Lisbon, 1662).

⁶ *Consideracao Astrologica sobre a coniunção Máxima e cometas passados e pronostico universal e luzitano*, BA, Ms. 51-VI-2, fl. 114r.

⁷ Ferraz (1662), p. 12.

⁸ Bocarro Francês expounded his calculation in *Foetus Astrologici libri três*, a treatise written in the 1620s and published in *Regnum Astrorum Reformatum* (Hamburg, 1644). With respect to the Great Conjunction of 1603, also see Bocarro (Francês), Manuel. *Discurso que o Doutor Manoel Bocarro Medico, Filozofa e Matematico Luzitano, fez sobre a conjunção maxima, que se celebrou no anno de 1603 aos 31 de Dezembro*, BGUC, Ms. 103. For details on Bocarro's messianic thinking and calculations, see Carolino (2004), especially 490-495.

a new ruler.⁹ In Europe, astrologers insisted, it meant that a hidden king was to come forth and found an empire based in Hispania. This prediction was based, among other details, upon the fact that in this conjunction, Saturn appears “under” Jupiter, and Saturn was taken as the sign ruling Muslim and Jewish peoples.¹⁰

The appearance of comets was generally associated with recent planetary conjunctions. The most widely held belief by astrologers about the origin of comets was that they somehow concluded the effects of conjunctions. Thus, during the first decades of the seventeenth century, comets were unsurprisingly taken by Portuguese astrologers as portents of great political change, religious conflict and other kinds of social unrest. One example is the prediction made by André de Avelar (1546-? after 1622) about the 1607 comet. According to this professor of mathematics at the University of Coimbra, as a result of this comet, “a king will die almost of a sudden death, and princes and nobles of the highest rank will die. A war will be waged in a nearby land, or rather, many wars will occur in many places, and there will be the destruction of cities, shipwrecks and great dangers and raids by pirates at sea, and their fleets will spread fear and do great ill at seaports. There will be great changes in religion and political affairs. There will be different and unexpected journeys and embassy missions.”¹¹ The same kinds of effect were predicted when other comets came into view, such as those of 1618.¹²

Astrologers on comets

The sort of effects astrologers ascribed to comets were closely connected to their understanding of these phenomena. In general, Portuguese astrologers adhered to Aristotle’s conception that comets were incandescent gases comprised of earthly exhalations that moved across the

⁹ *Juizo da Conjunção Magna de Jupiter e Saturno feita aos dezanove de Julho ás cinco horas da manhã do Anno de 1623 pera o Meridiano dos Tartaros*, BGUC, Ms. 155, fl. 52v.

¹⁰ *Juizo da coniução magna do ano de 623*, BA, Ms. 51-VI-2, fl. 113r.

¹¹ “Morrerá hum Rey quasi de morte repentina, e morreraõ principes e grandes. Alevantarse ha huma guerra muito vezinha ou para milhor disser muitas em muitos lugares, e averá destruyção de cidades, naufragios, y grandes pereguos e Roubos de Piratas nos mar e com suas armadas assombraraõ e faraõ muito mal em portos maritimos. Averá grandes mudanças na Religiaõ, e nas cousas politicas. Averá jornadas e embaxadas diferentes e fora do acustumado.” Avelar, André de. *Juizo que tirou em Coimbra Andre do Avelar Cathedratiquo da Cadeira de Mathematica sobre os effeitos do Cometa que apareceo no anno de 1607*, BA, Ms. 51-VI-2, fl. 107v.

¹² See, for example, *Observações do Cometa que foi visto em Novembro de 618*, BA, Ms. 51-VI-2, fl. 47v., Avelar, André de. *Discurso Astronomico e Astrologico do cometa que appareceu por novembro de 1618 em Coimbra*. Pello Me. Andre de avellar lente jubillado em mathematica, BA, Ms. 46-VIII-16, fl. 6r., *Exposição breve dos dous cometas que em novembro de 618 apparecerão*, BA, Ms. 51-VI-2, fl. 81r.

borders of the terrestrial region. As Pedro Mexia (an astrologer of unknown origin and family) mentioned with regard to the 1618 comets, “the best position and the one that the Moderns defend, in accordance with Aristotle, is that [a comet] is a gathering or agglomeration of viscous exhalations raised from the Earth by the force of stars to the supreme region of air, where it is heated and catches fire; this conflagration is a comet.”¹³ Thus, comets were taken to be meteorological occurrences, i.e. a phenomenon that took place beneath the sphere of the Moon. In 1618, most of the leading astrologers vouched for this interpretation, including André de Avelar, António Najera and Mendo Pacheco de Brito.¹⁴ The exception was Manuel Bocarro Francês.

Manuel Bocarro Francês (also known as Jacob Rosales) was born in Lisbon around 1593 to a crypto-Jewish family. After studying philosophy and mathematics at the Jesuit college of Santo Antão, which was Portugal’s leading centre of mathematical learning, Bocarro Francês went to Spain to study medicine.¹⁵ He studied at Alcalá de Henares University and the University of Sigüenza, where he eventually obtained his degree in medicine.¹⁶ More than likely, it was when in Spain that Bocarro first learnt of the cosmological thinking of Jerónimo Muñoz (ca. 1520 – ca.1591), a celebrated professor of Hebrew and Mathematics at the University of Valencia.¹⁷ Evidence of Muñoz’s influence can already be seen in Bocarro’s defence of a Stoic-influenced cosmology.¹⁸ Rejecting the Aristotelian view of nature, Bocarro argued along the lines of Muñoz that all celestial matter, including planets, was elementary in nature, which meant that the heavens should be regarded as corruptible and fluid. Bocarro also rejected the existence of Aristotle’s *primum mobile* and the spiritual entities that a large number of Peripatetician claimed were responsible for the movement of celestial bodies. According to him, celestial bodies moved by themselves.¹⁹

¹³ “La mejor, y la que tienen los Modernos, conformandose con Aristoteles, que es una junta, o conglutinacion de exhalaciones viscosas, levantadas de la tierra, por la fuerza de las estrellas, hasta la suprema region del ayre, adonde se inflaman, y encienden; y aquella inflamacion es el cometa.” Mexia (1619), fl. [5v.].

¹⁴ Avelar, André de. *Discurso Astronomico e Astrologico do cometa que apareceu por novembro de 1618*, cit., fl. 3v., Najera (1619), fls. B2v.-B3r., Brito (1619), fl. A6v. See also Avelar (1619).

¹⁵ An account of scientific teachings in early modern Spain (with particular reference to mathematical disciplines) can be found in Navarro Brotóns (2006).

¹⁶ Traditional historiography also mentions the University of Montpellier as a medical training institution attended by Bocarro Francês, though there is no evidence to support this. Documental evidence of Bocarro’s medical studies can be found in Azevedo (1910), p. 186, Viterbo (1911), p. 21.

¹⁷ On Jerónimo Muñoz and the transmission of his works, see Navarro Brotóns (1981), Navarro Brotóns (1995), pp. 57-59, Navarro Brotóns (1998), pp. 189-191.

¹⁸ See Carolino (2004), pp. 498-501.

¹⁹ Bocarro expounded his cosmological thinking in *Vera Mundi Compositio* ((1654), pp. 1-12), a treatise written in the early 1620s but published only in *Fasciculus Trium Verarum Propositionum Astronomicae, Astrologicae et Philosophicae* (Florence, 1654).

In 1618, Bocarro Francês had returned to Lisbon, where he observed the comets that appeared later that year and published his *Tratado dos cometas que appareceram em Novembro passado de 1618* (Lisbon, 1619). Having adhered to Stoic cosmology, Bocarro had no difficulty in recognising the celestial nature of comets.²⁰ As he saw it, the 1618 comets made their way around Mars and appeared as a result of the alterations and changes that occurred in the heavens.²¹

Bocarro's treatise on comets does not seem to have been well received by contemporary Portuguese astrologers/astronomers. Indeed, Mendo Pacheco de Brito wrote a severe critique of his *Tratado dos cometas* in which he made some harsh comments about Bocarro's mathematical procedures and data (e.g. on his calculations of the parallax) and strongly contended his stated belief that celestial bodies moved by themselves and not by means of spiritual entities, such as angels, and that they were made of air, the same air that filled the whole universe from the Earth to fixed stars.²² Pacheco de Brito believed that these theses would oblige philosophers to abolish the concept of solid and hard orbs, to sustain the rectilinear path of celestial motion, to suggest the animate nature of celestial bodies, and to recognise that celestial bodies and terrestrial bodies were formed of the same sort of matter. To sum up, Bocarro's views put the entire Aristotelian-Ptolemaic cosmos in jeopardy.²³

Mendo Pacheco de Brito's critique of the *Tratado dos cometas* demonstrates the extent to which Portuguese astrologers were attached to Aristotle's natural philosophy, particularly his distinction between the celestial and terrestrial regions. The idea that the heavens were made up of a substance that was essentially different from terrestrial bodies was widely held by astrologers. In this context, it is no surprise that they were unwilling to recognise the celestial nature and location of comets. Even as of the mid 1600s, when Portugal's philosophical community had already taken such theses for granted, there were leading astrologers who still argued for the meteorological nature of comets. A case in point was physician and astrologer Manuel Gomes Galhano Lourosa. Lourosa was the most proliferate author of astrological almanacs in Portugal throughout the seventeenth century, publishing one a year from 1637 to 1675.²⁴ When a comet was observed in the skies in 1664, Lourosa did not miss the chance of publishing a sizeable work on the phenomenon.

²⁰ Important literature exists on the role the observation of comets played in the decline of the Aristotelian world view. See, for example, Hellman (1944), Drake & O'Malley (1960), Westman (1972), Barker & Goldstein (1988) and Van Nouhuys, Tabitta (1998).

²¹ Bocarro (Francês) (1619), fl. 13v.

²² Brito (1619), fls. [18v-19r].

²³ For further details on the controversy between Pacheco de Brito and Bocarro Francês, see Camenietzki, Carolino & Leite (2004).

²⁴ There is no study on Manuel Lourosa. An account of his activity as author of almanacs can be found in Carolino (2002), pp. 55-61.

Polymathia Exemplar, as it was entitled, testified to Lourosa's familiarity with the most current authorities on the subject in the country, such as Bocarro Francês, Francisco Soares Lusitano and particularly Cristoforo Borri, whom he quoted copiously. Nevertheless, Lourosa continued to defend the Aristotelian thesis by which comets were "a multitude of fatty and viscous exhalations gathered closely together that ignite by the action of fire."²⁵ There were several facts that could prove that comets took place in the region of the air. Lourosa's arguments, which included the fact that comets were short-duration phenomena, and that they were always associated with strong winds and mathematical procedures (Lourosa meant the calculation of parallax), demonstrated that comets occurred below the Moon.²⁶ Yet, the main reason for regarding comets as meteorological phenomena reads as follows: "sometimes comets change in size from small to large and from large to small. The heaven does not suffer this kind of alteration, but the air does. Therefore, comets are airy bodies and not celestial ones."²⁷ In other words, heavenly bodies were incorruptible and substantially different from their terrestrial counterparts. For this reason, transient phenomena such as comets ought to be taken as meteorological occurrences.

Astrological influence of comets

Portuguese astrologers' defence of the meteorological nature of comets posed one major snag: how could a meteorological phenomenon contribute to astrological influences? The astrological theories Portuguese authors endorsed were based upon the belief that celestial bodies exerted a vital influence over the terrestrial region because they were superior to terrestrial bodies in ontological terms. This planetary influence was actually one of the main arguments commonly used to defend the superiority of celestial bodies.²⁸ Constituted as they were of the unchanging fifth element (*quinta essentia*), celestial bodies were believed to generate the four primary qualities that produced the four basic elements that comprised life on Earth. The influence of planets was exerted in three ways: the planets' motion, light, and influence (*influentia* or *influxus*).²⁹ Astrologers took this natural philosophical theory as the foundation for defen-

²⁵ "Cometa pois he multidão de exhalações (...) pingues e crassas, e bem juntas, que se acendem com o fogo." Lourosa (1666a), p. 10.

²⁶ Lourosa (1666a), pp. 16-18.

²⁷ "Os cometas algumas vezes fazem mudança de pequenos em grandes, e de grandes em pequenos: o Ceo não padece estas mudanças, mas o Ar as passa: logo são aéreos e não celestes os cometas." Lourosa (1666a), p. 17.

²⁸ See, for example, Conimbricenses (1593), p. 40.

²⁹ On the theory of celestial influence, see North (1986), Grant (1987) and Carolino (2003), especially chap. 1, which analyses this theory in Portuguese context.

ding an astrological *scientia* and practice. Manuel Lourosa, for instance, explicitly mentioned how important it was to be aware of celestial influences in his medical work entitled *Discurso Medico, appendis de contagios ao tratado do Cometa*, which he added to his treatise on the 1664 comet. As far as the theory of celestial influence was concerned, Lourosa maintained that “the stars influence through the agency of their motion, light and influx. The motion of stars and heavens is the vehicle of the influences, *Namque motus nihil aliud esse videtur, quam virtutis vehiculum*. As light is so distant from us that it is not very powerful. *Lumen vero, quod distat a nobis, vim habet debilem et imbecillam*”.³⁰

Generations of astrologers had had to deal with this issue long before the seventeenth century Portuguese astrologers. The main strategy was to relate conjunctions of celestial bodies to the production of comets. Ptolemy had stated that solar and lunar eclipses were generally followed by the appearance of comets – as Portuguese astrologers acknowledged. More commonly accepted amongst Portuguese astrologers was Abu Ma’shar’s theory according to which conjunctions of superior planets usually generated comets. André de Avelar and Pedro Mexia were two of the astrologists who particularly defended this position.³¹

António de Najera put forward a more ambitious explanation inspired by the philosophical theory of the influence of celestial bodies over terrestrial bodies. He claimed that comets were produced by the action of planets. Through their motion, light and *influentia*, planets produced concentrations of terrestrial exhalations, which then developed into comets. Unlike motion and light, the influence caused by *influxus* was thought to be neither perceptible nor intelligible. It could only be known through its effects, not its process. Standard interpretations held that the production of gold and other metals within the Earth, magnetism, and the phenomenon of tides were all representative of this sort of unseen influence radiating from the heavens. To these effects of celestial *influentia*, Najera added the action of condensation and stabilisation of cometary matter, by which comets were created.³²

Whilst celestial bodies seem to us to be of a small size for they are very distant from us, in fact the smallest star in the heavens is indeed much greater than the whole Earth. As celestial bodies are so great in size and number, they exert a great effect on the things beneath by means of

³⁰ “Obrão as estrelas com os instrumentos de seu movimento, lume e influxo. *Agunt igitur stellae etc.* O movimento das estrelas e dos ceos he vehiculo das influencias. *Namque motus nihil aliud esse videtur, quam virtutis vehiculum*. A luz por muy distante de nós, não tem força vigorosa. *Lumen vero, quod distat a nobis, vim habet debilem et imbecillam*”. Lourosa (1666b), p. 75.

³¹ Avelar, André de. *Discurso Astronomico e Astrologico do cometa que apareceu por novembro de 1618*, cit., fl. 3v., Mexia, fls. [7r.-7v.].

³² Najera (1619), fl. B2v.

motion, light and influence, extracting and raising moist vapours and dry exhalations from the Earth. By their qualities and consistencies, these vapours and exhalations rise differently in the region of the air, some higher and some less high, and are transformed into rain, snow, hail, while those which are more oily and warmer turn into many igneous expressions such as lightning and sparks, and those which are very viscous rise to the supreme region, from whence comets are made.³³

Hence, António Najera established a bond between the influence of perfect celestial bodies and the occurrence and astrological significance of comets. As comets resulted from planetary influence, these phenomena were endowed with the qualities of the planets which had been most active in their production as well as the astrological qualities of the constellation where they appeared. Thus, for example, a comet generated by the action of the Sun would take on the astrological qualities of this “planet” and be considered a ‘*cometa solar*’ (solar comet). In creating this distinction, Najera paved the way for astrological predictions based upon comets. Solar comets, for instance, were often associated with the death of kings and first-rank nobility and therefore great political change.³⁴

Cometary divination

The process of astrological divination based upon comets took into account different factors. As an anonymous text on the 1618 comets summarises, “the natural purpose [of comets] is to indicate hunger, plagues and wars and changes to kingdoms, laws and customs depending on the planets with which they are associated, the place where they appear and their colour”.³⁵ To these three points – associated planets, place and colour – Portuguese theorists of cometary divination³⁶

³³ “Os corpos celestes inda que à nossa vista pareçam de piquena grandesa pella muita distancia em que estaõ de nós, todavia a menor das do firmamento he muito mayor que toda a terra, e como são taõ grandes e tantas obraõ com muita força nas cousas qua debaixo por meyo de movimento luz e influencia, arracando, e levantando da terra, e agoa vapores humidos e exhalações secas, e dando com ellas na regiaõ do Ar, humas mais e outros menos altas, conforme suas qualidades e consistencias se convertem em chuvas, neves, granizo, e as mais oleoginosas e calidas em varias impreções Igneas como relampagos, raios, coriscos, e as muito mais viscosas passaõ a suprema Regiaõ das quais se fazem os Cometas.” Najera (1619), fl. B1v.

³⁴ Costa, Francisco da. *Tratado Astrologico dos Cometas*, BL, Codex 2063 Egerton, fl. 16r.

³⁵ “O fim natural [dos cometas] he seneficarnos as fomes, pestes e guerras, mudanças de reinos, leis e customes segundo os planetas a que se juntão e o lugar onde aparesem e a cor que elles trazem (?)”. *Exposiçõ breve dos tres Cometas que appareserão em Novembro*, BA, Ms. 46- VIII-16, fl. 9r.

³⁶ In seventeenth century Portugal, four authors theorised that comets were provided with astrological influence: Francisco da Costa, António do Espírito Santo, João de Araújo Sardinha and Luís Gonzaga. Curiously, two of these authors, Francisco da Costa and Luís de

added another seven factors: celestial conjunctions and astrological houses, position, shape and size of a comet's nucleus and tail, the motion and duration of a comet.³⁷

According to the standard theory that explained comets' origins by means of the influence of planets, the first step in interpreting the effects of a comet was to look at the planet which was supposed to have been responsible for extracting the exhalation from the Earth, since it was generally understood that a comet would take on the astrological qualities of that planet. To this end, Francisco da Costa (c.1567-1604) distinguished seven kinds of comet according to their respective planetary nature: Saturnian, Jovial, Martian, Solar, Venus-comets, Mercurial and Lunar comets.³⁸ Saturnian comets, for example, were originated under the influence of a cold, dry, earthly and masculine planet, so were regarded as foretelling earthquakes, low temperatures, food shortages, and illnesses characteristic of melancholia, such as catarrh, high fever and leprosy.³⁹

Together with the planets, astrologers also had to take into account the position of the comets with regard to the zodiac and the main constellations. Depending on the signs of the zodiac and constellations that a comet passed through, different effects could be expected in specific countries and places. Francisco da Costa believed that comets which appeared in Taurus portended wars all over Europe and great illness and slaughter in Babylon. Other astrologers simply associated comets appearing in Sagittarius with a subsequent sudden tax rise.⁴⁰ In their analysis of a comet's passage through the zodiac, astrologers also had to take the cardinal direction into account. For example, if a comet appeared in the east with the Sun in Virgin, great wars would certainly follow, but if the comet came into view in the west and the Sun was in the same sign, only small battles would ensue.⁴¹

In astrologists' predictions, the time of day and period of the year in which a comet emerged also had to be considered. "The gentile astrologers say that when comets appear during the spring, they foretell infertility; in the summer, wars; in the autumn, pestilence; in the winter, new laws and customs. (...) If the comet appears in the morning with

Gonzaga, were Jesuits, professors of mathematics at the Lisbon Colégio de Santo Antão. On the Jesuit teaching of astrology in Portugal, see Carolino (2003), especially pp. 79-111.

³⁷ A presentation of the early modern process of cometary divination can be found in Schechner Genuth (1997), pp. 51-65.

³⁸ Costa, Francisco da. *Tratado Astrologico dos Cometas*, BL, Codex 2063 Egerton, fls. 15r.-17r. See also Gonzaga, Luis de. *Compendio dos Juizos Cometarios*, BA, Ms. 46-VIII-22, 113v.114r. and Sardinha, João de Araújo. *Curiozidades Mathematicas Coppilladas por Joaõ de Araujo Sardinha. No anno de 1615*, BGUC, Ms. 1029, pp. 120-122.

³⁹ Costa, Francisco da. *Tratado Astrologico dos Cometas*, fl. 15v.

⁴⁰ [Tratado de Astrologia Judiciária], BGUC, Ms. 529, fl. 11r.

⁴¹ Figueiredo (1603), fl. 168r.

the first rays of the sun, its effects will be felt very soon afterwards; if it comes out late in the day, they will be belated and less evident. (...) If the comet appears just before sunrise, it denotes wars, changes of empires, kingdoms, laws, very important, marked things particularly concerning princes."⁴²

Issues relating to a comet's physical appearance, such as its colour, shape, the size of the nucleus, its tail and its duration also indicated to whom, where, when and how long its major effects would occur. As far as colours were concerned, comets were generally assumed to manifest the colour of the planet which had played a key role in their production. As Luís de Gonzaga put it, "from the colour of the comet, one may know which planet takes part in its nature."⁴³ Thus, lunar comets were supposed to have received not only the Moon's astrological qualities, but also its silver colour.⁴⁴ Another important factor in astrological prognostication was the comet's shape and size. The different shapes of the nucleus and tail were categorised in great detail by António do Espírito Santo, to which he gave the names: *Véru*, *Tenáculo* or *Caudato*, *Pértico*, *Roza*, *Ascóni*, *Miles*, *Aurora*, *Argento*, *Niger* and *Cerácias*.⁴⁵ Each of these comets would have specific influences and would particularly affect certain people and countries.⁴⁶ Lastly, the duration of a comet was also understood to provide important information about the extent of its effect. The common view was that the longer a comet endured, the greater its effect would last.⁴⁷

Overall, these were the most common factors Portuguese astrologers took into account when they used comets to predict the political outlook. They also often combined them with historical records on previous comets. Information about the supposed effects of a comet with a particular trajectory made it easier for astrologers to conjecture what effects a similar comet might have. In the late seventeenth century, after the 1681 comet, one astrologer believed that "this prodigious comet's path and motion

⁴² "Dizem os Astrologos gentios, que quando os Cometas parecerem no Veraõ, significação esterilidade; quando no Estio, guerras; quando no Ottono, pestes; e quando no Inverno, significação leys, e costumes novos, e tambem estes tem significação sobre a agoa, e secura, como os do Estio. (...) Se o Cometa apparecer pela menhaã diante dos rayos do Sol, seraõ seus effeitos muito cedo; e se á tarde, tardios e menos evidentes (...). Se o cometa apparecer pouco antes de nascer o Sol, denota guerras, mudanças de Imperio, Reyno, Leys, couzas mui notaveis e assinaladas, e pela maior parte toquaõ aos Principes (...)." Sardinha, João de Araújo. *Curiozidades Mathematicas*, p. 120r.

⁴³ "pella cor do Cometa se conhece de que planeta participe a natureza." Gonzaga, Luís de. *Compendio dos Juizos Cometarios*, fl. 115r.

⁴⁴ Gonzaga, Luís de. *Compendio dos Juizos Cometarios*, fl. 111r., Sardinha, João de Araújo. *Curiozidades Mathematicas*, p. 119.

⁴⁵ Espírito Santo, António do. *Cometas* (Tratado de), BGUC, Ms. 2830, fls. 340r-348v. See, also, Sardinha, João de Araújo. *Curiozidades Mathematicas*, pp. 123r-125r.

⁴⁶ Espírito Santo, António do. *Cometas* (Tratado de), fls. 342-342v.

⁴⁷ Sardinha, João de Araújo. *Curiozidades Mathematicas*, p. 119, Gonzaga, Luís de. *Compendio dos Juizos Cometarios*, fls. 114v.-115r.

was very alike to the comet which appeared in 1577, in the time of the dearly beloved king, Dom Sebastião. As it then gave Portugal the great expectations of happiness and an auspicious future, its return now indicates that the expected effects will be effected by the hand of his kin and descendents.”⁴⁸

The decline of astrological enquiry: comets as divine signs and natural causality

This sort of messianic prognostication was, however, rather uncommon by the late 1600s, the result of a steady decline in astrological forecasting in Portugal. This can be seen very clearly, for instance, in the astrological almanacs produced in Portugal at the time. Mirroring the trend in other European countries, Portuguese astrological almanacs had started to dismiss traditional astrological contents in favour of more utilitarian information. Additionally, by the turn of the century, these astrological works were starting to leave some leeway for light-hearted entertainment, and characters such as the prolific astrologer Manuel Galhano Lourosa started to be the subject of widespread mockery.⁴⁹ Comets were likewise on the receiving end of this decline in astrological enquiry, with a corresponding reduction in their significance in political divination. The comets that appeared during the 1660s and 1680s did not occasion the usual prophecies of a new political era. On the contrary, the authors who touched on the subject in the late 1600s seemed increasingly disinclined to relate comets to political issues at all. As mentioned with regard to the comet of 1680, “what the ancient mathematicians falsely said is verily a mistake, that comets, with their influences and the constellations through which they passed, would cause events that often depended upon human freedom, such as wars, the destruction of cities, the violent death of princes, marriages and other such things in over which planets have no power.”⁵⁰

⁴⁸ “Este cometa prodigioso no seu curso e movimento na maior parte conformouse, com o cometa que appareceu na era de 1577 no tempo do tão desejado Rey D. Sebastião; o qual como deu a Portugal por então as maiores esperanças de felicidade e aureos seculos, assim voltando agora e reflorecedo no seu sangue e nos seus netos dará os esperados effectos.” *Lembrança do cometa de 1681 e aviso discursivo de Agosto de 1685 sobre seus effectos já passados e futuro*, BA, 54-IV-33//56 B, fl. 4v.

⁴⁹ See, for example, *Pronostico e lunario do anno de 1659 calculado pelo meridiano de Cantanhede dedicado ao Conde da mesma terra, na ocasião em que foi às linhas de [?] e luas*, BNL, Cod. 589, fls. 68r.-75v.

⁵⁰ “He erro verdadeiramente o que os antigos Mathematicos fingirão dizendo que os Cometas, com seus influxos, e constellações pellas quaes passaraõ, cauzavaõ aquelles acontecimentos porque muitas vezes acontece dependerem da liberdade humana, como são as guerras, roinas de Cidades, mortes violentas de Princepes cazamentos, e outras couzas semelhantes, nas quaes os Astros não tem poder.” *Breve Tratato do Cometa que appareço no mez*

There are many potential reasons behind this change in attitude towards comets. One was certainly the new conception of nature and methods for its investigation which were gaining ground in Portugal. In fact, in the 1660s the most common understanding of the natural world tended to discourage any attempt to put forward a meta-explanation of comets. Explanations based upon mechanical causalities and involving mathematical reasoning and a progressively more instrumentalist conception of experience were gradually supplanting the Aristotelian physical explanation that depended upon different qualities and unseen influences. As António Pimenta, a former professor of mathematics at the University of Coimbra, mentioned in his work on the 1664 comet, "all the natural sciences are established upon two poles or are founded on two bases: one is reason and the other is experience."⁵¹

This being the case, astronomers seemed increasingly predisposed only to explain the origin, paths and effects of comets within the wider context of the natural order. A case in point is the aforementioned António Pimenta (1620-1700). In his *Sciographia da nova proximasia celeste e portentoso cometa do anno de 1664* (Lisbon, 1665), Pimenta clearly demonstrates his familiarity with the seventeenth century controversy surrounding comets, including abundant quotations of Tycho Brahe, Kepler, Michael Maestlin, Cornelius Gemma, Adam Tanner, Johann Baptist Cysat, Giuseppe Biancani, Cristoforo Borri, Christoph Scheiner and Niccolò Cabeo. When he turned to the physical composition and origin of comets, Pimenta's view was that comets consisted of concentrations of planetary exhalations⁵² originated from certain celestial conjunctions.⁵³

With regard to the potential effects caused by comets, Pimenta stressed the Patristic view that comets should be regarded as divine signals. This being the case, they were supposed to pass through celestial conjunctions, stars and houses of the zodiac, making use of fabulous names and illusory significances men attributed to these stars in order to allegorically advise them of their divine message.⁵⁴ Other authors such as Jerónimo de Santiago (1644-1720) emphasised the traditional theory by which the effects of comets were similar to those of the planets which brought them into existence. Nevertheless, they only had an impact on

de Novembro do anno de 1680, que constava de huma estrella por cabeça com huma cauda comprida, e apareça de madrugada, o qual tratado fes na Cidade de Goa hum Padre da companhia Mathematico estrangeiro que veyo do Reino, BGUC, Ms. 185, fl. 122r.

⁵¹ "Todas as sciencias naturais se estribão em dous polos, ou tem por fundamento duas bazes, huma he a rezam, outra, a experiencia." Pimenta (1665), p. 26

⁵² Pimenta (1665), p. 4.

⁵³ Pimenta (1665), p. 20.

⁵⁴ Pimenta (1665), pp. 44ff., especially p. 75. The same view can be found in *Breve Tratato do Cometa que apareço no mez de Novembro do anno de 1680 ...*, BGUC, Ms. 185, fl. 122r., *Volta e Tornada do Cometa passado que appareço no Año de 1681 Reducido e Reresentado e Explicado por Anno presente, e os mais que se seguem*, BA, Ms. 54-IV-33//56 B, fl. 1r.

natural phenomena like the weather and disease. Santiago's forecast for the 1680 comet, for instance, was that "by the participation that our comet has of the influence of Mars, it means (as say the astrologers) that while this comet has an effect over men whose nature is influenced by this planet, they could suffer serious illnesses caused by the choleric humour, such as intestinal diseases, tertian fevers, phrenitis, *herizipola*, haemorrhages, plague fevers, etc".⁵⁵

Though leading astrologers such as Manuel Galhano Lourosa continued to hold that comets were meteorological phenomena caused by celestial bodies and were therefore subject to astrological interpretations, the more widespread view by this time was that comets were of a celestial nature and their influence over earthly bodies was restricted to the natural realm.⁵⁶ This was the position held by Valentin Stansel (1621-1705), a Jesuit astronomer and missionary in Brazil. Born in 1621 in Olmutz (near Prague), Stansel joined the Society of Jesus in 1637 and reached Bahia, Brazil, in 1663 after stays in Rome and Lisbon.⁵⁷ In Brazil, alongside his other activities such as teaching moral theology, Stansel continued with his studies of the natural world. He wrote an unpublished book on Brazilian nature, *Mercurius Brasilicus sive Coelis Brasiliensis Oeconomia*. He also turned his attention to the study of comets, writing observations on no fewer than four comets during his stay in South America. Some of these, such as those on the 1664 and 1665 comets, came to the attention of European scholars when they were published by the Jesuits of Prague in 1683.⁵⁸ His contemporaries also took notice of other observations he made, especially that of a 1668 comet published in the *Giornale dei Letterati*, which was cited by Isaac Newton in *Principia*.⁵⁹ Stansel went into depth on the physical nature of comets in his most celebrated book, *Uranophilus Caelestis Peregrinus* (Gand, 1685), in which he sustained the thesis that comets were exhalations of the major stars.⁶⁰

⁵⁵ "Pella participação que o nosso cometa tem das influencias de Marte significa (conforme dizem os astrologos) em algum tempo, que durarem seis effeitos nos homens de sua natureza, e de idade perfeita, doenças agudas, cauzadas de humor colerico, a saber, dezentérias, terçãas, frenezis, herizipola, fluxos de sangue, febres pestiliciais, etc." Santiago (1681), p. 15.

⁵⁶ Other cases defending the celestial nature of comets can be found in Santiago (1681) and Perrstelman Alofsio, *Discurso sobre o cometta que apareseo, ou se comesou a notar em Lisboa a 7 de dezembro do anno de 1664 e porventura que muitos dias antes apparecesse, e nelle se não houvesse reparado, como he de crer segundo se colhera do que dissermos*, BPE, Ms. CX/1-5, n^o 16, chapter 2.

⁵⁷ For details on the life and scientific thought of Valentin Stansel, see Camenietzki, 2003. Information on the observation of comets in Brazil by Stansel can also be found in Casanovas & Keenan (1993).

⁵⁸ Valentin Stansel, *Legatus Uranicus ex Orbe Novo in Veterem*, Prague, Typis Universitatis Carolo-Ferdinan, 1683.

⁵⁹ Newton probably read the version translated from *Giornale* that appeared in the *Philosophical Transactions*, 9 (1674), pp. 91-93. See Isaac Newton, *Philosophiae Naturalis Principia Mathematica*, London, 1687, pp. 507-508.

⁶⁰ Stansel (1685), p. 43.

He also related the appearance of comets to the theory of the corruptibility of the heavens, thus challenging the Aristotelian view that was widely accepted amongst Portuguese astrologers that celestial bodies were ontologically superior.⁶¹ Acknowledging the celestial nature of comets, Stansel admitted the likelihood of comets having an influence, though this was restricted to the natural realm.⁶²

In other words, as the seventeenth century progressed, the effects of planets and comets on terrestrial bodies were reduced to what the authors regarded as an influence by natural means. In general, political events were not part of such effects. Nonetheless, even in the late seventeenth century comets could still be interpreted as tokens of the future. Indeed, the metaphysical role of warning humankind about their moral conduct continued to be attributed to comets and other extraordinary phenomena. However, unlike in the early 1600s, there was a clear dissociation between this role of superior advice and astrological causality. Comets continued to forewarn humankind about the potential results of their social conduct, but they no longer brought about effects, whether by means of a comet's natural agency or through direct divine action.

A notable exception to this new attitude towards comets was António Vieira (1608-1697). During his long lifespan, the celebrated Jesuit repeatedly made reference to the appearance of comets, 'new stars' and other cosmological issues in his sermons. In 1695, close to the end of his life, Vieira was living in São Salvador da Bahia and occupied in his attempt, which would prove frustrated, to finish a work he considered his greatest masterpiece, *Clavis Prophetarum*. At this time, he observed a comet rising in the sky, which gave him the chance to record his last views on the subject and publicly expound his bitter feelings about the course taken by Portuguese politics and society in the late seventeenth century. He entitled the work '*Voz de Deus ao mundo, a Portugal e à Bahia*' (the voice of God to the world, Portugal and Bahia). Although his contemporaries were wont to take comets as distant signs from God, Vieira was in no doubt that they were actually His direct handiwork, created specifically according to a particular desire and aim. This 'divine voice' could be perceived in two ways by the 1695 comet. First, it foretold of

⁶¹ Stansel (1685), p. 51.

⁶² Nevertheless, in a manuscript treatise on the 1689 comet whose author is allegedly Stansel, the Jesuit missionary explored in depth the other perspective according to which comets were "divine warnings" for humankind. Despite this, he stressed that comets should be regarded as natural events and not direct interventions of God in the ordinary course of nature. Cfr. [Stansel, Valentin]. *Descurço Astronomico sobre o estupendo e fatal Cometta ou Nuncio pella Divina providencia enviado aos mortaes. O qual foy visto a primeira vez a 6 de Dezembro do Anno de 1689 ao romper da Aurora neste nosso Horizonte Oriental Pernambuco na altura Austral 8 graos no signo de Escorpão*, BNL, Ms. PBA 484, fls. 170-177v.

natural phenomena such as great storms and earthquakes. Second, it meant that wars, changes to empires and the death of kings were to take place. This message was what really mattered in the comet, Vieira sustained. It was particularly addressed to Portugal and should be taken as a divine assurance that Portugal would establish its Universal Monarchy, a peaceful and godly era, before the end of the world. Nevertheless, for this to happen, Portuguese society had to purge itself of all depravity and dissoluteness.

If you look at yourself, Portugal, you will find yourself full of vices and sins that make you entirely deserving of being the instrument of such a holy mission as the conquest of the Holy Land. And for this reason, the first disposition toward this mission will be a general punishment, through which God will purify and purge this sick body so corrupted by vicious humours.⁶³

By the late 1600s, however, Vieira's was a solitary voice in prophesying such a glorious future for Portugal. Besides the crisis in early modern astrology itself, the political state of affairs in Portugal was not particularly favourable for political prophesies from the late 1660s onwards. After a period of great political turmoil following the 1640 Restoration, during which different groups disputed political power, and the coup d'état of 1667 that removed D. Afonso VI from power, Portugal entered a new phase in its history. Under Dom Pedro II's lengthy reign from 1667 to 1706, there was a steady move towards an increased centralisation of political power. This process culminated in the reigns of Dom João V (king from 1706 to 1750) and Dom José I (1750-1777) by the hand of his Illuminist prime minister, Marquis of Pombal. Although Pedro II governed by the traditional system of *conselhos* (councils), which undoubtedly favoured one faction of the time-honoured nobility, he took decisive steps to centralise political power. One example was the relationship he established with the *Corte* (Court). Traditionally, Portuguese kings used to summon the court to convene not only for extraordinary issues such as taxes rises, but also for certain kinds of regular administrative business. D. Pedro broke with this tradition, and only summoned the court to convene three times in total, only to discuss dynastic matters. The establishment of the state apparatus under D. Pedro came together with the theoretical conception of the modern state in Portugal. The end of the war against the 'Castilian monarchy' in 1668 and the reorganisation of the government during the reign of D. Pedro II greatly favoured the role of the king in Portugal's political scene. Based

⁶³ "Se olhares, Portugal, para ti, achar-te-ás muito cheio de vícios e pecados, que te fazem totalmente merecedor de seres digno instrumento de tão santa empresa, como a conquista da Terra Santa; e por esta causa a primeira disposição para ela será algum castigo geral, com que purifique Deus e purgue este tão enfermo corpo de viciosos humores com que está corrupto". Vieira (1952), p. 33.

upon these features, during the eighteenth century Portugal would see an increasing rationalisation of its political systems and means leading to a notable period of political stability until the French Revolution shook up European politics. Needless to say, in this context of political stability and centralised power, there was little room for astrological prognostications about a glorious, utopian empire under the rule of the Portuguese kings.

Conclusion

Throughout seventeenth century Portugal there was a slow but steady decline in the theory that planets exerted an astrological influence over terrestrial bodies. The process of rationalising and centralising the political system together with major changes concerning conceptions of nature and new 'scientific' methods partially explain this change in astrological beliefs. Astronomical observations and cometary prognostications provide evidence of this feature of early modern Portuguese culture. If Sebastian's comet (of 1577, *cometa sebástico*) gave rise to numerous judicial astrology texts, the comets that appeared one hundred years later simply inspired texts on natural philosophy. In other words, from 1577 to the end of the seventeenth century, the belief in the political influence of comets was replaced by an explanation which took only physical features into account.

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