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IATROMATHEMATICA (MEDICAL ASTROLOGY)
IN LATE ANTIQUITY AND THE BYZANTINE PERIOD

MARIA PAPATHANASSIOU
University of Athens, GR

SUMMARY

Byzantium inherited the rich astrological tradition of Late Antiquity, especially that of Alexandria, where even in the 6th century A.D., astrology was taught in philosophical schools. The great number of Byzantine astrological MSS, which preserve works of famous authors and many anonymous treatises, shows the survival and continuity of astrology in Byzantium. Through medical astrology physicians can better understand the temperament of an individual man and find out about his bodily constitution and psychic faculties, his inclination to chronic and acute diseases, the possibilities of curable or incurable cases, and finally the periods of major danger for his health. They can also conjecture about the evolution of a disease, choose a favourable time for an operation, or initiate a cure.

Prolegomena

Among all divinatory arts invented by man in order to know his future, astrology was the most sophisticated in terms of philosophical background and the astronomical techniques required for casting a horoscope. These techniques were particularly refined in Alexandria, the great flourishing center of Greek science – especially mathematics and astronomy – and cross-road of various cultures and religions. The great number of horoscopes cast provides an excellent basis for scientific research into the relations between astrology and medicine and has indeed led to the creation of a special discipline, that of iatromathematica. Astrology linked with medicine gained further esteem and became more influential. This may partially explain how astrology succeeded in surviving in Late Antiquity and Byzantine Period in spite of the strong polemics.

Key words: Astrology – Medicine - Late antiquity - Byzantium

Astrology in Late Antiquity and the Byzantine Period

Throughout the Roman Empire astrology was considered the most nearly infallible method of divination. Any emperor, therefore, would feel duty bound to use it to discover future dangers to himself or towards the empire, and to pacify excited minds by withholding from them the stimulus of astrological predictions, while retaining for himself the counsel of his court astrologers. It seems very likely that astronomy, and presumably also the theory of astrology, were taught in the Roman state university (the Athenaeum) from its beginnings in 134 A.D. The very founder, the emperor Hadrian, was in fact both a firm believer in astrology and a practicing expert himself. On the other hand, from Caesar's death (44 B.C.) to that of Marcus Aurelius (180 A.D.) there were issued at least eight expulsion decrees against astrologers, all meant as temporary measures; for this reason astrologers were allowed to stay in Rome under the condition that they would not practise their art. Diocletian, in 294 A.D., was the first to replace the traditional regional ban on astrology with one throughout the entire empire on all divinatory activities considered dangerous by the government, his edict having the same temporary character as had former regional edicts¹. Much later, Christian emperors changed these edicts to permanent ones for religious reasons².

It should be remembered that there were many well-known astrologers, and a great number of horoscopes cast during this period are preserved in papyruses and later Byzantine MSS. In his detailed study of an ancient commentary on Paulus of Alexandria's astrological work (c. 378 A.D.)³, L. G. Westerink showed that the materials comes from a series of lectures given in May-June of the year 564 A.D. in Alexandria either by Olympiodorus or by one of his disciples who taught mathematics or astrology. It is then possible that in the 6th century A.D. astrology could be still an important part of the Quadrivium⁴, and therefore of the whole teaching program on philosophy⁴. In this case it seems very likely that Stephanus of Alexandria (late 6th- early 7th century) had the opportunity to study astrology there, and after his invitation to Constantinople by the emperor Heraclius (610-641) to cast the horoscope of the emperor⁵ and that of Is-

lam⁶. This is strong evidence that even Christian emperors were interested in consulting astrologers both for their personal and state affairs. Moreover, modifications of the relevant legislation were always possible according to circumstances; for example, a comparative study of the body of laws in the 8th and 9/10th century shows that under the Macedonian dynasty legislators were more intensively active against magic than under the Isauries, whose own milder legislation was an amelioration of the related laws of the Codex Justinianus⁷.

The survival and continuity of astrology in Byzantium is shown in a long letter of the emperor Manuel Comnenos (1143-1180) addressed to the monk Michael Glykas, in which he defends astrology. One of his arguments is that the emperor Constantine the Great consulted the famous astrologer Vettius Valens⁸ for the most favourable date for the foundation of Constantinople, so that it could resist the attacks of the enemies; *if Constantine and other pious emperors and archpriests had considered astrology a heretical knowledge, they would not have used it*⁹. The flourishing of astrology under the Comnenoi, Angeloi and Palaiologoi¹⁰ and the great number of astrological MSS preserved in private libraries of state and ecclesiastical officers show that many intellectuals had reconciled their Christian beliefs with astrology¹¹.

An early piece of evidence is offered by Stephanus of Alexandria, who in the first part of his *Apotelesmatike Pragmateia* (Horoscope of Islam) refers to *ancient wise men's books on scientific initiation through astronomy* (τῶν πάλαι σοφῶν βιβλίουσ περὶ τῆσ δι' ἀστρονομίας ἐπιστημονικῆσ μυσίσεωσ) and explains the *introductory method* (εἰσαγωγικὴν μέθοδον) to them. Among other things he also tries to offer to his readers a clear knowledge through the *eventual and possible configuration of the stars* (ἐνδεχομένησ τε καὶ δυνατῆσ ἀστροθεσίασ) which God gave us to use *like a prophetess* (προφήτιδοσ δίκην). The author's piousness becomes evident as he points out that all natural phenomena and changes in the world, everything that happens in political and social life such as men's talents and their position in society, are due to the *will and energy of the Creator, God of all, to whom alone belongs the creative causality* (αὐτοῦ μόνου ἐστὶν ἡ ποιητικὴ αἰτία) and

who uses the stars and their motions as simple organs even though he could achieve his aims without them¹². As far as the possibilities of the extension of our knowledge and the accuracy of our predictions through the position of the stars are concerned, Stephanus firmly asserts that *perfect and true knowledge belongs to God, while men, forming their conjectures on the ground of elements and stars, in part know and in part predic*¹³.

A few centuries later Manuel Comnenos states that the use of astrology on appropriate occasions is not impiousness, as Michael Glykas accused it of being, because astrology *simply foretells taking into account the powers, temperaments and qualities of the stars, as they are given to them by God*. He further explains that *the stars are not a creating cause, because their bodies are irrational and insensitive; thus, we do not ask them in expectation of an answer, but knowing by observation (παρατηρητικῶς) their nature, and hence their temperament, and the configuration (of the planets) which reveals all this, we infer from there present and future events*¹⁴.

Finally, Ptolemy pointed out that astrology should not be confused with other arts by which most, for the sake of gain, deceive the vulgar pretending to be able to foretell many things, even those that cannot naturally be known¹⁵. Manuel Comnenos also distinguishes between astrologers and those who invoke stars and talk with them, and explains that for this reason astrology is misunderstood and astrologers are named magicians¹⁶.

Astrology and Medicine

According to Hippocrates physicians should have a good knowledge of astronomy in order to understand seasonal phenomena and changes which would influence the health of their patients, either in chronic or acute diseases¹⁷. Much later Galen criticizes those physicians who praise Hippocrates while acting contrary to his advice; for example, although he said that astronomy and consequently geometry, contributes a major part to medicine, not only they do not learn it but even blame those who use it¹⁸. These important astronomical phenomena, known long ago and mentioned in Hesiod's *Works and Days* (8th century B.C.), are the solstices and the equinoxes, which mark the be-

ginning of the seasons, and the risings and settings of conspicuous fixed stars in relation to the Sun, which also mark the beginning of particular periods in the year¹⁹.

An extension of the astronomical knowledge required for physicians is that of astrology. A poem preserved in a Greek codex of the 16th-17th century praises physicians who are also astrologers, and like Crinas know the appropriate time to give medicines to their patients; tells that Crinas became so rich that he offered half of his fortune for the construction of the fortress of his native town of Massalia; and affirms that, as a consequence, the observation of the planetary positions may be both useful in medical prognostication and a source of wealth in medicine²⁰. Taking into account that Crinas was active in Rome during the first century A.D.²¹, this poem, preserved in a so late MS offers strong evidence of the survival and continuity of medical astrology through the centuries. In his *Tetrabiblos* Claudius Ptolemy (2nd century A.D.) says that the *Egyptians have entirely united medicine with astronomical prediction through what they call their iatromathematical systems*²². Consequently, *iatromathematica* is the link between astrology and medicine, and the term *iatromathematicians* (ιατρομαθηματικοί) refers to those who practised medicine in conjunction with astrology, especially in Greco-Roman Egypt.

Astrology as art is strongly related to special applications of the Stoic principle of sympathy among all parts of the world, which implies both their correlation and interaction. The celestial bodies have, therefore, an influence upon all things on the earth (stones, minerals, metals, waters, plants, animals) and especially on man. A very subtle *spirit* (πνεῦμα) composed mostly of fire and air permeates all things, thus being their common underlying principle²³. On this basis Ptolemy states that *a certain power emanating from the ethereal substance is dispersed through and permeates the whole region about the earth, which throughout is subject to change*²⁴. He also explains that the Sun, together with the environment, affects all things on the earth, because of the changes in temperature and dryness/humidity caused by its annual and diurnal motions. All mundane things, animate and inanimate, change in company with the Moon, the influence of which becomes es-

pecially evident at the time of new and full moon and its quarters. Finally, various phenomena of the fixed stars and planets and their *aspects*²⁵ to one another affect the environment as they aid or oppose the sun's power in particular ways. He asks, therefore, if farmers and herdsmen by mere observation of celestial phenomena can offer a conjecture as to the sort of thing that will result, why could we not perceive the temperament of a man from the surrounding heavens at the time of his birth²⁶?

Ptolemy points out that every science that deals with a theory about the quality of matter is *conjectural, and not to be affirmed absolutely* (εἰκαστικὴν εἶναι καὶ οὐ διαβεβαιωτικὴν). This is also true for *knowledge attained by astronomical means* (ἢ δι' ἀστρονομίας γνῶσις), due to various factors, the most important of which are as follows: a) its composition of many unlike elements, being as it is a multi-faceted art; b) the aspects of the planets observed by the ancients for their predictions and used by us as examples, are more or less similar but not identical to the modern aspects of them upon which we base our predictions; c) heredity; d) influence of the local environment of the places of birth; e) conditions of rearing and customs in different places; f) impotence and mistakes of those who are not accurately instructed in its practice²⁷. According to him we should not reject all prognostication because it can sometimes be mistaken, but welcome what is possible; nor should we ask everything of the *art* (astrology), but we should rather appreciate its beauty, even in instances in which it could not provide the full answer²⁸.

In later times prognostication by means of astrology and medicine is considered *skillfull guesswork* (ἐντεχνος στοχασμός), which should be practised by a man committed to truth, who deserves to make a thoughtful and tolerable prediction. For neither astrology alone nor medicine alone can predict everything, since other environmental and social factors such as laws, customs, countries, education, providence, prayer to God and prediction of the future may cause changes in human behaviour²⁹. Manuel Comnenos, too using the same terminology and arguments as the author of the above mentioned anonymous text in *Codex Marcianus graecus 335*, calls *skillfull guesswork* the combined knowledge of medicine and mathematical art (astrol-

ogy). He refers to its possibilities and to God's intervention in hopeless cases according to physicians or astrologers, and concludes that the prudent (γνωστικός) observer of *results caused by the natural activities of the astral bodies* (διὰ τῶν ἀποτελεσμάτων τῶν φυσικῶν ἐνεργειῶν τῶν ἀστρώων σωμάτων) draws close to the understanding of God; because, from the power hidden in the astral bodies he sees both their communion with one another and their separation, and understands therefore God's wisdom and creative intelligence (σύνεσιν)³⁰. Manuel Comnenos, using the same arguments as Ptolemy in order to show the influence of the Sun and the Moon upon all things on earth, asks, *Why should we then exclude the influence of the other stars which are also part of the surrounding heaven*³¹? He explains further that the art may be proved mistaken either because of the impotence (ἀσθένεια) of men using it or because of changes brought about by God's intervention for purposes of thaumaturgy³². I suggest that Comnenos means those men who are *not accurately instructed in the art*, as Ptolemy pointed out.

Iatromathematica

1. Genethliology

a. Qualities of the planets

Medicine and astrology inherited from Greek philosophy the four primary elements (fire, air, water, earth) and the two pairs of opposite qualities (hot-cold, dry-humid) which relate them to one another. In medicine the elements correspond to the four humours of the human body (fire-yellow bile, air-blood, water-phlegm, earth-black bile)³³. In astrology the twelve signs are divided into four groups of triplicities according to the four elements, while the planets manifest powers related to the four qualities; plants and minerals used in remedies are also ruled by signs and planets³⁴. In both medicine and astrology the patient's temperament and symptoms of disease indicate the remedy required according to the principle of opposite qualities; thus remedies are distinguished in various categories according to these qualities and their combinations (e.g. drying, heating, moisturizing, cooling, drying and heating, and so on)³⁵.

The Sun's active power is heating and moderately drying, while that of the Moon is humidifying and moderately heating, as she reflects the sunlight. Saturn's power is cooling and moderately drying; that of Mars is drying and burning. Jupiter and Venus share the same qualities but in opposite ways: Jupiter's temperate action is heating and humidifying, though his heating power is the greatest of the two; Venus warms moderately, but chiefly humidifies, like the Moon. Finally, Mercury's power is either drying or humidifying, changing quickly from one to the other.

Two of the qualities, warm and humid, are considered *fertile and active* (γόνιμα καὶ ποιητικά), while the other two, cold and dry, are considered *destructive and passive* (φθαρτικά καὶ παθητικά). Thus, according to their qualities the planets are distinguished into *beneficent* (Jupiter, Venus) and *maleficent* (Saturn, Mars); the Sun and Mercury share both natures. Another distinction is that between *diurnal* (Sun, Jupiter) and *nocturnal* (Moon, Venus) planets, while Mercury is at certain times either diurnal or nocturnal. Moreover, to Saturn as maleficent planet is assigned the day, and to Mars the night, their qualities being opposite to those of day and night.

During a synodic month the Moon changes her qualities; waxing from new moon to first quarter she produces most moisture, and most heat from first quarter to full; waning from full to last quarter she produces most dryness, and most cold from last quarter to new moon. The qualities of the other planets depend upon their stations³⁶, heliacal risings and settings, and are modified according to their positions in the signs and their *configurations* (συσχηματισμοί), i.e. their *aspects* to one another. So, aspects of *trine* (120°) and *sextile* (60°) permit a harmonious expression of the qualities of the planets involved; while those of *square* (90°) and *opposition* (180°), being considered *difficult*, produce tension. The quality of the *conjunction* (0°) depends upon the quality of the planets involved.

b. The Horoscopos and the four centers (angles) of the horoscope

The degree of the zodiac rising at the time of birth is called *Horoscopos* (ὠροσκόπος) and its observation should be made by means of *horoscopic astrolabes* (δι' ἀστρολάβων ὠροσκοπίων), the

only instruments accurate enough to give the exact minute of the hour *to knowledgeable observers* (τοῖς ἐπιστημονικῶς παρατηροῦσι)³⁷. The sign of Horoscopos together with those of the Sun's and the Moon's position, plays a major role in the formation of physical constitution and personality as a whole. In a horoscope the diameter drawn from Horoscopos to the descending degree of the zodiac (Descendant), symbolizes the local horizon dividing the sky into the upper hemisphere which is visible at that moment, and the lower hemisphere which is invisible. The degrees of the zodiac which culminate above and below the horizon (upper and lower culmination) together with the Horoscopos and the Descendant (occident) are called *centers* (angles) and are considered of great importance in iatromathematica.

Hermes Trismegistus says that both at conception and birth, rays from the seven planets are mingled (ἐπιπλέκονται) on every part of a person's body according to their places in the twelve signs³⁸. Following tradition, Ptolemy considers that naturally (φύσει) the moment of conception is the starting point of births but since it is usually unknown, potentially and accidentally (δυνάμει δὲ καὶ κατὰ τὸ συμβεβηκός) it is the time of birth. In cases in which either by chance or by observation we know the time of conception, we examine the configuration of the planets at that time³⁹. Special instructions for the calculation of the time of conception from the time of birth are given by Hephaestion and other astrologers on the basis of an old rule of Petosiris, as follows: *The Moon's position at birth was Horoscopos at conception, and inversely, the Moon's position (or its diametrical) at conception becomes Horoscopos at birth*⁴⁰. Dealing with this subject Hephaestion explains also a) why babies are born in seven or ten (synodic) months, and b) the reason for which there are differences in the duration of pregnancy in each case (from 176 days and 8 hours to 206 days and 8 hours for babies born in the seventh month; from 258 days and 8 hours to 288 days and 8 hours for those born in the tenth month).

c. Zodiacal signs, planets and the human body

Microcosm-man is an image of macrocosm-zodiac, and this implies a relation between the twelve signs, their rulers and the

major parts and organs of the human body, known as *melothesia*, as follows:

<i>Sign</i>	<i>Planet</i>	<i>Part or organs of the body</i>
<i>Aries</i>	Mars	head
<i>Taurus</i>	Venus	neck, throat
<i>Gemini</i>	Mercury	shoulders, arms, lungs
<i>Cancer</i>	Moon	breast, ribs, stomach
<i>Leo</i>	Sun	thorax, heart
<i>Virgo</i>	Mercury	belly, bowels
<i>Balance</i>	Venus	buttocks, kidneys
<i>Scorpio</i>	Mars	genitals, buttocks
<i>Sagittarius</i>	Jupiter	thighs, liver
<i>Capricorn</i>	Saturn	knees
<i>Aquarius</i>	Saturn	legs, circulatory system
<i>Pisces</i>	Jupiter	feet

The planets are lords of special parts and organs of the human body. In the head the Sun and the Moon as *luminaries* are lords of the eyes, the Sun of the right eye and the Moon of the left. Saturn is lord of the ears, Jupiter of the brain, Mercury of tongue and throat, Venus of smell and taste, and Mars of all organs charged with blood⁴¹. For the whole body we have the following lordships⁴²:

<i>Planet</i>	<i>Parts or organs</i>
<i>Sun</i>	sight, brain, heart, sinews, all righthand parts
<i>Moon</i>	taste, drinking, stomach, belly, womb, all left-hand parts
<i>Saturn</i>	right ear, spleen, bladder, phlegm, bones
<i>Mars</i>	left ear, kidneys, veins, genitals
<i>Jupiter</i>	touch, lungs, arteries, semen
<i>Venus</i>	smell, liver, flesh
<i>Mercury</i>	speech, thought, tongue, bile, buttocks

*d. Bodily injures and diseases*⁴³

According to their positions in the signs, the two angles of the horizon (Horoscopos and Descendant) and the sign preceding the Descendant, and their aspects to one another and to other planets, especially the luminaries, the maleficent planets can cause either injuries or diseases in the parts of the body which are related to these signs. If the *maleficent* planets are *oriental*, i.e. on the Horoscopos, their energy is manifested violently, and thus they affect the subject once by *injury*. As instances are mentioned, for example, blindness of one or both eyes, sterility in men, miscarriages, embryotomies, premature births, cases of men deprived of their sexual organs or injured therein, eunuchs, hermaphrodites, females who are childless or sterile, and so on. If the maleficent planets are *occidental*, i.e. on the Descendant, their energy is manifested as *disease-bearing*, either continuously or by sudden attacks on the subject. Generally, Saturn and Mars cause diseases if they are in aspect to the Sun as evening stars or to the Moon as morning stars.

Saturn causes diseases by making people emanciated and weak and suffer from cold bellies, increase of phlegm, rheumatism, jaundice, dysentery, cough, elephantiasis and the like; while Mars makes them spit blood and suffer from melancholy, weak lungs, scurvy, fistulas, haemorrhoids, tumours, burning ulcers, eating sores, and generally corrosive diseases; women suffer also from miscarriages and embryotomies. If Mercury is in aspect to them it prolongs their evil influence; its being in aspect to Saturn activates rheumatism and gathers fluids in the chest, throat and stomach; its being in aspect to Mars causes ulcerous sore eyes, eschars (scabs), abscesses, erysipelas, lichen-like eruptions of the skin, black bile, insanity and the sacred disease.

If Mercury and the Sun are occidental in some aspect to the Moon and afflicted by Saturn, the subjects may suffer from some impediment in speech or lisp or have some difficulty in enunciation. In case both luminaries are angular (in the two horizontal angles), and afflicted by Saturn and Mars being also angular, deformations of the body, either congenital (if they are joined with the luminaries) or by accident (if they culminate in heaven or are elevated above the luminaries), may occur⁴⁴.

If a planet as ruler of death in someone's horoscope is seriously afflicted, it may cause him to suffer a fatal disease, which is always in conformity with the qualities of the planet and the sign involved. The afflicted planet disturbs someone's temperament by destroying the balance of the four humours in the body and producing a serious disease. Generally, Saturn's fatal diseases are due to excess (κατὰ πλεονασμόν) of moisture and Jupiter's to improportion (ἀμετρίαν) of pneuma; Mars' are due to pyrexia and excessive heat (κατ' ἐκπύρωσιν καὶ ἀμετρίαν τοῦ θερμοῦ); Venus' are due to excess or destruction of moisture and Mercury's to those of dryness⁴⁵.

e. Diseases of soul⁴⁶

The Moon's influence upon *epilepsy* was known to physicians long ago, and Aretaeus of Cappadocia states that it seems that *the disease reaches the Moon* (ἐς τὴν σελήνην ἀφικνεῖσθαι ἢ νοῦσος) and hence they name it *sacred*⁴⁷. If Mercury and the Moon are oriental and unrelated to each other while afflicted by the maleficent planets, the subjects may suffer from *epilepsy*, if Saturn is angular by day and Mars by night; from *insanity*, if inversely Saturn is angular by night and Mars by day. If the maleficent planets alone rule this configuration, the diseases are incurable and latent; they may be curable but noticeable if the beneficent planets are oriental and the maleficent occidental.

It should be noted that Ptolemy includes *homosexuality* of both sexes among diseases of soul; he explains it by means of the aspects of Mars and Venus to the luminaries, its character as notorious, restrained or impure depending further upon the aspects of Mercury, Jupiter and Saturn to the former.

2. Catarchic astrology (*Electiones*, καταρχαί)

a. Physician and patient

Knowledge and experience are necessary for a good physician who is always responsible for his patient. But a physician's possibility of curing him depends upon the exact time at which either the patient took to bed or his disease was made known/ or the physician came on the scene. Thus the physician should cast

a horoscope for the exact time of either case and check the position of the Moon, her age, her aspects (conjunction, square or opposition) to the maleficent planets, and the position of the beneficent planets⁴⁸.

In such a horoscope the Horoscopos symbolizes the patient, the Descendant symbolizes the disease, the upper culmination symbolizes the physician and the lower culmination symbolizes the evolution of the disease. If the Horoscopos is afflicted by the maleficent planets but the beneficent planets are at the Descendant, the patient is very ill and will be so for a long time. If the upper culmination is afflicted, the patient is unlucky because the physician is not good and is responsible for his patient's bad state. If the lower culmination is afflicted by maleficent planets, the patient is in great danger; he will be saved only if the beneficent planets are also there too.

Generally the Moon's position shows the kind and the cause of the disease. We should therefore check what star a few days ago was occidental or within 15 \AA of the Sun (ὑπαυγος) and afflicted the Moon either by square (90 \AA) or by diameter (180 \AA). The evolution of the disease and the healing of the patient depend upon the change of these aspects following the Moon's motion⁴⁹.

b. Evolution of a disease

In his work *On critical days*, which is a commentary on Hippocrates' homonymous work, Galen explains the influence of the Sun and the Moon upon chronic and acute diseases. He shows the relation between critical days and the Moon's phases, commenting on the sidereal and synodic months and giving an example of the influence of the *transit* Moon in aspect to the maleficent and beneficent planets in a patient's natal horoscope⁵⁰. In *De decubitu ex mathematica scientia* attributed to Galen⁵¹, but in great extent coinciding with Hermes Trismegistus' *Prognosticon de decubitu addressed to Ammon*, the cause and the evolution of a disease depend upon the Moon's position in the signs, its phases and age, and its strong aspects to the maleficent and beneficent planets at the time of manifestation of the disease.

The influence of the changing Moon upon the evolution of a disease was known to physicians long ago⁵². Hephaestion of

Thebes, a famous astrologer born 380 A.D., who surely knew Galen's *On critical days*, explains how critical days are related to the Moon's position at the starting time of a disease, her phases in various signs and her aspects to the maleficent planets⁵³. Pancharius' epitome (early 3rd century?) on the same subject is preserved in a MS of the 11th century, together with other related anonymous texts⁵⁴. Aëtius Amidenus (born c. 500), the well-known physician of the time of the emperor Justinian I (527-565), also refers to favourable and unfavourable critical days⁵⁵. As the old tradition continues in Byzantium, Michael Psellos, a famous scholar of the 11th century, in his *Carmen De re medica* also refers to the critical days⁵⁶. Moreover, in many MSS there are anonymous treatises with lists stating the expected evolution of a patient's disease according to its manifestation in each one of the thirty days (i.e. the age of the Moon) of a synodic month⁵⁷.

c. Surgical operations and abortions

According to Hephastion special care should be taken for surgical operations for which two conditions are of most importance: a) The Moon should be waning in conjunction with beneficent planets or approaching them; b) one should never operate the part of the body which corresponds to the sign in which the Moon is. Dorotheus of Sidon (1st century A.D.) imposes additional conditions: a) The Horoscopos should not be afflicted, as for example if a maleficent planet is *angular and retrograde* (ἐπίκεντρος ὧν ἀναποδίζη); and b) in a case when the Moon is in a tropical sign (Cancer, Capricorn), to operate only if she is in conjunction with beneficent planets. For an ophthalmic operation the Moon should be full both in light (full moon) and *numbers*⁵⁸, and in conjunction with beneficent planets without being afflicted by the maleficent⁵⁹.

Eight hundred years later the emperor Manuel Comnenos criticizes the ignorant man (ἄμαθής) who, contrary to the wise one (σοφός), does not understand the meaning of old astrological rules, like the following: *Do not touch with iron that part of the body which is related to the sign in which the Moon is* (μὴ ἄψη μορίου διὰ σιδήρου τῆς Σελήνης ἐπεχούσης τὸ ζῳδιον τὸ οἰκειούμενον τῷ μορίῳ ἐκείνῳ), which is actually Hephastion's first condition. His

explanation is that the Moon's nature is more moist than that of other stars, since she is nearest to the earth and receives most of earth's exhalations; the Moon's influence causes an increase of moisture (liquids) in the operated area and therefore, an inflammation there⁶⁰.

Although abortions were not made by physicians but by midwives or other practitioners, they are nonetheless a kind of operation and a very dangerous one. At abortions both the Moon and the Horoscopos should not be in dangerous degrees and also not afflicted by Saturn; for this reason they are given all favourable and unfavourable degrees of the zodiac for this kind of operation⁶¹.

d. Births

Generally births are easy whenever the baby comes out in the right way; this is usually done when the Moon is in *right* signs, which are those from Cancer (summer solstice) to Sagittarius inclusive. If the Moon is in *oblique* signs, i.e. from Capricorn (winter solstice) to Gemini inclusive, the birth may be difficult⁶². Moreover, births of male or female babies may be easy or difficult according to the position of the Sun, the Moon and the Horoscopos in male or female signs respectively. If Saturn is in a female sign and angular, births of females are difficult; if it is Mars, the birth may take place suddenly anywhere, like in baths or in the street⁶³.

e. Emetics and purgatives

Emetics and purgatives should be given when the Moon is waning in conjunction with beneficent planets or moving to form a favourable aspect with them; it is appropriate to give emetics when she is at the ascending node and purgatives at the descending node of her orbit⁶⁴. Most favourable signs for emetics are Gemini, Libra, Sagittarius and Aquarius, while the most unfavourable is Capricorn⁶⁵. The emperor Manuel Comnenos cites another old rule, as follows: *Do not give a purgative when the Moon is in conjunction with Jupiter* (μὴ δῶης τινὶ καθάρσιον τῆς σελήνης συνοδεύουσης τῷ Διδί). He explains that Jupiter's nature is *temperate* (εὐκράτος), and his conjunction with the Moon blunts a purgative's power (ἀμβλύνεται ἢ τοῦ καθαρσίου δύναμις τῆ τοῦ τοιούτου ἀστέρος συνόδῳ); consequently the

remedy is not able to draw the materials and to struggle against the patient's disposition (τὸ φάρμακον ἀσθενεῖ τὰς ὕλας ἐλκῦσαι καὶ ἀντιπαλαῖσαι τῇ διαθέσει)⁶⁶.

Epilegomena

The great variety and number of subjects of iatromathematical treatises are not the only reason precluding their extensive analysis in the space of a single article, since a good understanding of the above mentioned cases would require a fair knowledge of basic principles and techniques of astrology from the reader, and that is not usually possible. On the other hand, only a special book on iatromathematica, which would include all necessary elements of its theory and be illustrated with the related astrological charts for each case, could make this art comprehensible.

Nevertheless, it becomes evident that iatromathematica linking medicine with astrology played an important role in life in Byzantine period. How otherwise could the great number of iatromathematical works in astrological MSS stemming from Byzantine times be explained, if not by the great interest shown by high-ranking state or church officers and intellectuals, who had them in their private collections or had access to them in the libraries? An outstanding case is that of the emperor Manuel Comnenos, who among other arguments used old iatromathematical rules to defend astrology in 12th century Byzantium, thus demonstrating that at least basic principles of medical astrology were respected and applied by physicians at that time. Even popular medical treatises called *iatrosophia* (pl.) preserve iatromathematical rules. It also seems very likely that the influence of an iatromathematician upon a patient was much greater than that of a physician or an astrologer separately. The fact that Crinas' story survived so long shows that his great success in life as a physician-astrologer was very probably a model aspired to by many physicians for several centuries.

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13. STEPH. ALEX., ref. 6, pp. 271,19-21: *ὅτι ἡ τελεία γνώσις καὶ ἀψευδστάτη θεοῦ καὶ μόνου ἐστίν, ἄνθρωποι δὲ διὰ στοιχείων καὶ δι' ἀστέρων τεκμαιρόμενοι ἐκ μέρους γινώσκουσι καὶ ἐκμέρουσ' πρόλεγουσι.*
14. CCAG, VI, pp. 112,22-31: *τὰς τε γὰρ δεδομένας ὑπὸ θεοῦ δυνάμεις τοῖς ἀστροῖς καὶ τὰς κράσεις καὶ τὰς ποιότητας καὶ τὰ ἀπὸ τούτων προσημαίνει μόνα...οὐ τοῖνυν ποιητικοί, ἀψυχα γὰρ τὰ τῶν ἀστέρων σώματα καὶ ἄλογα καὶ ἀναίσθητα...ἀλλὰ γινώσκων τὴν φύσιν τῶν ἀστέρων καὶ τὴν ἐξ αὐτῶν κράσιν καὶ τὸν σχηματισμὸν τὸν δηλοῦντα σημειοῦται τὰ τε ὄντα τὰ τε ἐσόμενα.*
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18. GALEN, *ὅτι ἄριστος ἰατρός καὶ φιλόσοφος*, Kühn I, p. 53: *ἐπαινοῦσι μὲν γὰρ Ἱπποκράτην, καὶ πρῶτον ἀπάντων ἡγοῦνται, γενέσθαι δὲ αὐτοῦς ἐν ὁμοίῳ ἐκείνῳ, πάντα μᾶλλον ἢ τούτο πράττουσι. ὁ μὲν γὰρ οὐ μικρὰν μοῖραν εἰς ἰατρικὴν φησι συμβάλλεσθαι τὴν ἀστρονομίαν, καὶ δηλονότι τὴν ταύτης ἡγουμένην ἐξ ἀνάγκης γεωμετρίαν. οἱ δ' οὐ μόνον αὐτοὶ μετέρχονται τούτων οὐδέτερον, ἀλλὰ καὶ τοῖς μετιοῦσι μέφονται.*
19. Heliacal rising and setting: First visible rising of a star on eastern horizon before sunrise; last visible setting of a star on western horizon just after sunset. HESIOD, *Works and days*. vv. 383-7, 414-9, 479-80, 564-7, 571-2, 597-8, 609-11, 615-7, 663-5.

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24. PTOLEMY, ref. 15, I, 2, pp. 4-6.
25. In astrology, an *aspect* is a certain angular distance or separation measured along the ecliptic in degrees and minutes of celestial longitude between two planets (or a planet and the Ascendant or the Midheaven), as viewed from the Earth.
26. PTOLEMY, ref. 15, I, 2, p. 8.
27. *Ibid.*, p. 12.
28. *Ibid.*, p. 18.
29. *Περὶ τοῦ ὅτι στοχασμός ἐστιν ἐντεχνος ἢ διὰ ἰατρικῆς καὶ ἀστρονομίας πρόγνωσης* in: Cod. Marc. gr 335, saec. XV. In: CCAG, II, pp. 186,1-14.
30. CCAG, VI, pp. 122,35-123,27 (123,4-5: καὶ ἰατρικὴ καὶ μαθηματικὴ τέχνη στοχασμός ἐστιν ἐντεχνος τῆς τῶν προσδοκωμένων ἐναντίων περικκοτῆς).
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36. *Station* or stationary point is a position at which a planet temporarily does not seem to move in longitude (or right ascension) on the celestial sphere. Planets move direct from west to east, then for some time they are seen as stationary, and then retrograde moving from east to west; after a new station they move direct again and so on.
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39. PTOLEMY, ref. 15, III, 1, p. 222f. In: his *Refutation of all Heresies* (IV, 3-4) HIP-POLYTUS of Rome (about 230 A.D.) tries to show that the astrological art of the Chaldeans is wrong, since the calculation of true Horoscopus, which is the most important element in a horoscope, is impossible either for the time of conception or that of birth; because of many factors the former is totally unknown and the latter cannot be known with accuracy.
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57. E.g. *Προγνωστικὸν περὶ ἀρρώστων· ψῆφος τῆς Σελήνης* in: Cod. Mediolan. E 16 sup., saec. XIII, in CCAG, III, 39, pp. 25-40.
58. Here *numbers* are meant the degrees of either one or both ecliptic coordinates of the Moon (longitude and latitude): HEPHAISTION, ref. 37, III, 16 p. 271,4f. App. II. (p. 331,11-12). Ecliptic latitude (β) of a celestial body is its angular distance north or

- south of the ecliptic as seen from the Earth; it is measured in degrees from 0° at the ecliptic to 90° at the ecliptic pole. Ecliptic longitude (λ) gives its angular distance from the vernal equinox and it is measured on the ecliptic from 0° to 360°.
59. HEPHAISTION, ref. 37, III. 32, pp. 292-293.
 60. CCAG, VI, 111, pp. 7-19.
 61. HEPHAISTION, ref. 37, III. 5, pp. 245,26-246; 12, p. 267; 13, pp. 267-268.
 62. The terms *right* and *oblique* attributed to the signs are related to the way they appear to ascend above the horizon.
 63. HEPHAISTION, ref. 37, App. I, pp. 330-331.
 64. Ascending and descending nodes of the Moon's orbit are the two points of intersection of its orbit with the ecliptic (zodiac). At the ascending node the Moon moves from south to north of the ecliptic and at the descending node it moves from north to south.
 65. HEPHAISTION, ref. 37, III. 34, pp. 293-294. Also Cod. Marc. gr. 334, saec. XIV, f. 145, in CCAG, II, pp. 157-158.
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Correspondence should be addressed to:
Maria K. Papathanassiou, University of Athens, Department of Mathematics, Panepistimiopolis- 15784 Athens, GR.

Articoli/Articles

LA PESTE NOIRE À COSTANTINOPLE DE 1348 À 1466*

MARIE-HÉLENE CONGOURDEAU
CNRS, Paris, F

SUMMARY

BLACK DEATH IN CONSTANTINOPLE (1348-1466)

The Black Death visited Constantinople eleven times between 1348, when the epidemic surged in the Mediterranean world, and 1466 when our inquiry ends. We know of these visits from the writings of eye-witnesses who describe their experiences in correspondence written at that time, in stories reconstructed retrospectively, or in theological discussions. After having related the story of these eleven epidemic episodes, this article will try to catch, through these sources, the medical perception of the plague by contemporaries, its social consequences and its psychological, spiritual and theological repercussions.

Le dernier siècle de l'empire byzantin peut être considéré comme une lente agonie. Aux défaites militaires entraînant la perte de territoires et à terme le naufrage de l'empire, aux guerres civiles et conflits dynastiques, aux séismes propres à la région, se joignit un fléau que Byzance partagea avec les mondes occidental et islamique, mais qui, ajouté aux autres malheurs des temps, ne pouvait qu'accentuer le sentiment d'abandon d'un peuple qui se croyait, à juste ou injuste titre, réprouvé par Dieu.

La ville de Constantinople connut, entre 1348 et 1466, onze visites de la Peste Noire. Au-delà des *topoi* et des conventions littéraires, les descriptions et lamentations des témoins oculaires sont une source inappréciable sur ces épisodes dramatiques, leur déroulement, leurs conséquences sociales et les séquelles psychologiques, spirituelles et théologiques qu'ils laissèrent après leur passage dans des esprits traumatisés¹.

Key words: Black Death - Plague - Constantinople.