Federik Grisogono, the iatromathematician

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Ivana Skuhala Karasman and Luka Boršić: "Federik Grisogono, the iatromathematician"

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Abstract

In this paper the authors provide a general introduction to Federik Grisogono's understanding of the role of astrology in medicine. The aim is to cover two topics: on one hand we wish to introduce this Croatian Renaissance philosopher / physician, who is not widely known. On the other hand, we introduce some of his ideas on the applicability of astrology in medicine. Grisogono was one of the most prominent Renaissance defenders of iatromathematics ('medical astrology'), who made a significant influence in the field, mostly due to his systematic and fervent defence of astrology. We also contextualize the role of astrology in the Renaissance period: contrary to today's position on astrology as a pseudo-science, in Grisogono's times using astrology to explain the causes and cures of human illnesses presented an attempt to explain the position of humans in the universe on a rational basis, different from the previous, more theological explanations.

Key words: Federik Grisogono, Renaissance astrology, medicine

Introduction[1]

In this article, we will look back at a single aspect of foresight/foreknowledge in terms of the natural Renaissance philosophy of the 16th century, in southern Europe, based on the example of Federik Grisogono. His ideas on foreknowledge are most fully developed in his medical treatise whose full title reads: *Federici Chrisogoni nobilis Iadertini artium et medicinae doctoris subtilissimi et astrologi excellentissimi de modo collegiandi, pro[g]nosticandi, et curandi febres, necnon de humana felicitate, ac denique de fluxu et refluxu maris lucubrationes nuperrime in lucem editae.* ("*Most recently published studies concerning diagnosis, prognosis and treatment of fevers, as well as human luck and finally concerning the Ocean tides, by the most subtle doctor of the arts and medicine, and most excellent astrologist Federik Grisogono, a nobleman from Zadar*").[2] This work is the oldest known treatise on medical theory published in southern Europe outside Italy.[3] It is also a good example of the Renaissance understanding of astrological medicine.[4]

Outside Croatia Grisogono is a little-known philosopher from the end of the 15th and the beginning of the 16th century – thus it may be useful to give some basic data about him. Federik Grisogono Bartolačić[5] was

[1] This text is based on some research-results published in Karasman (2013): 158-72. A different approach on the topic is taken by Banić-Pajnić (2009).

[2] Later in the text it will be quoted as *De modo collegiandi, prognosticandi et curandi febres*. The booklet of 55 pages (paginated in the recto-verso format, i.e. the last paginated page is numbered as 27) was published in Venice in 1528. On the page [28], after the Table of content, it is indicated that the publishers were G. A. de Sabbio and his brothers. In this work we have unified Latin orthography according to the customary 'classical' way of writing Latin. E.g. instead of *sciencia* we write *scientia*, instead of *pronosticandi* we have *prognosticandi* etc.

[3] Belicza (1974): 111.

[4] Thorndike's succint verdict is worth repeating: "*Federicus Chrisogonus Iadertinus showed himself an aggressive advocate of astrological medicine ….*", Thorndike (1941): 314.

[5] This is the Croatian version of the spelling of his name. The Latin versions read Federicus Grisogonus / Chrysogonus / Chrisogonus. The ambiguity of the spelling can be clearly seen by comparison of the front page and the 'impressum' on the last page of his *De modo collegiandi, prognosticandi et curandi febres*. Thus, in the front

most likely born in 1472, to father Antun Grisogono and mother Katarina Giorgi, both coming from wealthy noble families in Zadar. At the age of five, he was orphaned, and custody was assumed by his uncle, Franjo Grisogono. Grisogono spent most of his life in Zadar. During this time, Zadar was under Venetian jurisdiction. Venice had come into possession of the city in 1409 after the King of Hungary, Sigismund of Luxemburg, had sold the city. Grisogono lived in Zadar until 1498, after which he went to Padua to dedicate himself to the studies of law and mathematics. Move to Padua was initiated and supported by his maternal cousins, Jeronim and Donat Civalelli, both doctors of philosophy who at the time served as rectors of the University of Padua. Grisogono left Padua the following year to spend the next two years travelling throughout almost the entire territory of Italy and a significant part of Europe, engaging in different wars under different rulers – interestingly, claiming that the initiative for his belligerent vagabondage came from his fervent love of mathematics.[6]

In 1501 Grisogono returned to Padua and began his studies anew. On the 23rd of November 1507, he was promoted to Doctor of Philosophy and Medicine.[7] In Venice, on the 29th of October of the same year, publication of his work *Speculum astronomicum* ("*Astronomical Mirror*") was completed. After acquiring doctoral degree, he accepted the position of Professor of Astrology and Mathematics at the University of Padua. Political reasons were the cause of his return to Zadar in 1511, and in 1512 Grisogono remained in Venice. Owing to his unfilled political prophecies,

page his name is written as 'Chrisogonus', whereas in the 'impressum' at the end of the book, his name is 'Chrysogonus'.

[6] *Et me divinis mathematicis ex toto dicavi, amore quarum accensus, non solum per totam Italiam, sed ferme per totam Europam peregre profectus sum sub diversis militando ducibus dogmata divi Platonis et Pythagorae secutus*, Chrysogonus/Grisogono (2007): 8. Grisogono's statement that he travelled Europe and fought under different warlords of the time because he was "*inflamed with love of mathematics*" is highly curious. We think it may be explained in the following way: the 'divine mathematics' he studied in Padua might refer to astrology so that he intended to say it might have been his destiny to travel across Europe and fight in different wars.

[7] Grmek (1985).

presented in Venice, a warrant for his arrest was issued and in such circumstances he needed to return to Zadar in 1512, where he spent the rest of his life. From 1525 until his death, Grisogono was often chosen for the alderman. From 1527 until 1528, he acted as counsellor to the governor of Zadar. In 1528, in Venice his second work *De modo collegiandi, prognosticandi et curandi febres* was published. Grisogono participated in the repair of the harbour in Rimini in 1537, falling ill at the end of that same year. He died in Zadar, most likely in the first days of the year 1538. Grisogono was married to Elizabeth, with whom he had six children: Jerome, Julio, Pompey, Catharine, Lucrezia, and Cynthia.[8]

The central problem of the entire *De modo collegiandi, prognosticandi et curandi febres* is the problem of foresight – it presents a background of a particularly medical, i.e. natural philosophical discussion. This was no novelty: foresight as a topic appeared within philosophical – in a very broad meaning of this word – works in medieval Europe onward from the 11th century. It is present for example in Hermann of Carinthia (12th c.), who, through his translating activities came in touch with Islamic astrology, and indirectly through Islamic philosophy, with ancient Graeco-Roman natural philosophy, as well as with Indian and other sources in which the topic of forecasting appears as relevant. The Islamic influence on European philosophy continued until the Middle Ages, and further on through the Renaissance, where the influence is visible in the work of Federik Grisogono.

The work *De modo collegiandi, prognosticandi et curandi febres* was primarily written as a medical manual in which, alongside medical topics, Grisogono dealt with some issues which have no place within medicine today. He made use of astrology as the discipline of forecasting development of illnesses. However, here it should be noted that the

[8] The storyline of Grisogono's life is rather well established mostly due to the fact that he himself gave much information in his own autobiographical letter *Oratio clarissimi artium et medicinae doctoris Federici Chrysogoni Iadertini in Academia Patavina publice habita*, which serves as an introduction to his *Speculum astronomicum*, Chrysogonus/Grisogono (2007): 8-25. A good overview is also to be found in Grmek (1990).

application of astrology in medicine was no commonplace. Namely, during the 12th century when we first see the appearance of the discipline, then mediated by Islam, in the beginnings of introducing Christian Europe to astrology, the gentile roots of the discipline were often referenced.[9] However, until the beginning of the 15th century, astrology had become so incorporated into the Christian understanding of the world, relying its descriptions a great deal on Aristotelian natural philosophy. In accordance with such views Grisogono does not use it as cautiously as the first Christian scholars who had come in touch with the astrological teachings whilst translating from Arabic to Latin.

The astrology of the late medieval and the Renaissance period has been until recently viewed as a pseudoscience, a reflection of irrational approaches to the world, and as a topic has not been considered worthy of the interest of modern scientists.[10] This kind of stance amongst scientists indicates how, by using our current methods of understanding the Middle Ages and the Renaissance, we achieve distorted image of these periods. Where positivistic, that is neo-positivistic, standards impose themselves in evaluating this historical period, it is difficult to understand all the dimensions of importance of astrology within these periods, especially its significance in the formation of a rational perspective of the world. Thus, astrology should not be viewed as a reflection of irrationality, but rather quite the opposite, as a discipline which imposed itself as one capable of providing explanations of how the world functioned. Consequently, in Grisogono's work, astrology imposed itself as a discipline which would provide medicine with an interpretation concerning the place of humans in the order of the universe. It also attempted to show how the knowledge of astrology could be useful, not only to the practice of medicine, but also for a good life.

[9] Cf. French (1994).

[10] This is largely influenced by Popper's and Lakatos's concept of scientific method as an empirical falsification, and in the writings of these authors, astrology was an often used example of a 'pseudoscience'. Certainly, they had in mind contemporary astrology. On the historical perception of astrology cf. Mover (1999).

Some preliminary mementoes on medicine in the beginning of the 16th century

Medicine from the end of the Middle Ages and the beginning of the Renaissance period encountered an illness that could not be responded to with the familiar tools of the time – the Black Death.[11] The disease in the form of a pandemic had spread throughout Europe in the 14th century and left behind a decimated population. In turn, it also had long-reaching consequences within religious life bringing upon social and cultural changes, altering almost all aspects of the life in that age. Alongside the disease that had in almost every way marked the historic period, the medicine of the Renaissance had been marked by the cultural exchange acquired in the 12th century – the intensive introduction of Christian Europe to Islamic and Graeco-Roman works. The knowledge which came from the Arabic translations revealed a somewhat different approach to illnesses, one which was different from the approaches based solely on the Christian teachings of original sin. Within theological teachings, illness could be understood as a means of punishment for sin. Illness as God's punishment was a very popular understanding of the illness which had marked the most of the Middle Ages and the Renaissance – the Bubonic Plague. At the time an explanation based on a theological understanding perhaps provided them with some form of psychological comfort, in order to cope more easily with changes in the world and understand how something disastrous was happening. However, these purely theological elaborations were very poor and quite useless when it came to preventing and curing the disease. Thus, many of the theological explanations that were found within a basic view of the world were built up with new knowledge acquired from contact with Islamic culture. It is not surprising that alternative explanations were sought.

A new approach to medicine was made possible through new knowledge acquired from Arabic translations into Latin. The most important contribution was made by Gerard of Cremona's Latin translation

[11] For more on the approach to the Black Death by Grisogono and his teacher, the famous Italian physician Alessandro Benedetti, see Colbassi (2013).

of Ibn Sīnā's (Avicenna, c. 980-1037) *Canon of Medicine*, which was the main textbook for medical studies in the universities of Europe until the end of the 17th century. In parallel with this, we also have the 12th and 13th century translations of astrological works from Arabic into Latin, in which the Istrian-born Herman of Carinthia (c. 1100-1160) played a pivotal role. How the disciplines of medicine and astrology started being intertwined is clearly explained by Sophie Page:

> "*In astrological medicine the mathematical and predictive aspects of astrology interacted with late classical theories which situated the microcosm of man's body in relation to the macrocosm. This relationship was often represented in the form of a diagram now called 'Microcosmic Man'. This central human figure is bounded by the spheres of the four elements and the planets, taking the place of earth in the medieval cosmology. Each planetary sphere contains a brief annotation which situates it astronomically, cosmologically and in relation to men.*"[12]

Medicine, astrology (and some luck) in Grisogono's *De modo collegiandi, prognosticandi et curandi febres*.

The most famous proponent of astrological medicine (iatromathematics) in the Renaissance was Marsilio Ficino, the author of the work *De vita libri tres*, composed between 1480 and 1489.[13] However, Ficino's defence of astrology does not imply that astrology was a universally accepted discipline. So, for example, his no less famous contemporary, Giovanni Pico della Mirandola, in his *Disputationes in astrologiam* in twelve books,

[12] Page (2012): 52.

[13] "*As a result of Ficino's alignment of material and celestial systems, their presumed correspondences, and imputed causes, the Three Books on Life, as Nancy Siraisi points out, became 'one of the most famous and influential Renaissance accounts of astral magic', and by extension one of the most sustained treatments of astrological medicine*", Beecher (2002): 251.

brought forth arguments against astrology in general,[14] as well as a sharp criticism of the medical use of astrology in particular.[15]

This sketchy historical background indicates that during the Renaissance there were mixed feelings towards astrological medicine, even among the coryphaei of the Renaissance humanism. It is beyond the scope of this work to discuss which of these two antithetic positions was more prevalent – it is enough to indicate that a certain closure of the debate happened in 1586 when Sixtus V issued the bull *Caeli et Terrae creator Deus* in which astrology was officially condemned as a fallacious and vane discipline. However, Grisogono, a century younger, advocated the use of astrology in medicine and thus belonged to the more mystical, Platonic, tradition within the Renaissance natural philosophy.

What we have described as characteristic of medicine of the late medieval period and the Renaissance would be mirrored in Grisogono's *De modo collegianadi, prognosticandi et curandi febres*. His work would, in words of Grisogono himself, carry on with discussions where Avicenna had left off. In this way, Grisogono's discussion should be viewed as an attempt to supplement understanding of the course of a disease and its prognosis, by allowing medicine to rely even more on astrology and astrological predictions. Astrology appears as the "*the true science of prediction*" (*vera scientia prognosticandi*), whose benefit, according to Grisogono, does not end in the field of medicine, but instead appears as an actual science of prediction, which may form a way to complete human happiness. It is a certain specific trait of Grisogono's approach to treat

[14] *Secundum testimonio bonorum artium medicinae, agriculturae, navigatoniaeque quae suis operibus astrologicas adhibent obscurationes* writes Pico in a chapter entitled "Why indeed do sailors, physicians, and peasants predict according to truth more often than astrologers?" (*Cur nautae, medici, agricolae, vera saepius praedicunt quam astrologi*), Mirandulanus (1971): 502.

[15] "*Pico's denunciations were especially provocative where medicine was concerned, because unlike various other medieval and Renaissance critics of astrology who routinely failed to confront the claimed usefulness of astrology for medicine (along with navigation and agriculture), Pico explicitly repudiated specific medical doctrines (notably that so-called critical days in illness were astrologically determined)*", Siraisi (2007): 86.

happiness within the context of medicine and prediction within medicine.

Renaissance humanism brought an important novelty: a different perspective on the position of humans in the cosmos. Consequently, medicine of the period viewed individuals as part of the natural order and no longer as subordinate to the transcendent. As a consequence, physicians of the time realized that curing and predicting illnesses largely depended on the discipline concerned with predictions within this natural order. From this perspective, it can be observed that astrology made use of more rational moments in attempting to understand the world viewed as a whole. Putting humans in the context of the natural order, and even understanding illnesses as part of that same natural order and no longer as a form of divine punishment for sins, indicates how astrology had become incorporated within the Aristotelian-Ptolemaic image of the world, and should be regarded as a step forward from the irrational. This is contrary to the opinion that was dominant in understanding the value of astrology and its validity as a subject of historical analyses, where astrology was seen a pseudoscience, an irrational approach to the world, unworthy of the attention from the perspective of modern science.

Astrology had, in relation to previous understandings and interpretations of the phenomenon in the context of medicine, indicated a rational step forward. Rationalization in Grisogono's use of astrology had two dimensions: the dimension of conceptualizing the world and the dimension of practical action.[16] From Grisogono's text, we see how he saw the application of astrology fitting into the Aristotelian-Ptolemaic image of the world, where the Earth, and the people inhabiting it, is placed into the centre of the universe. Earthly changes are understood as a reflection of greater influences, which are the reflection of occurrences, which climb up to a primary influence. Thus, astrology as a supplement to the accepted

[16] The link between astrology and medicine can be traced back to the beginnings of astrology's acceptance in Greece in 4th century BC. At that time astrology spread through the island of Kos, where Hippocrates' school was located, and further along the remainder of the Greek world. If we consider astrology to be linked to medicine from the time of Hippocrates, it is easy to understand why this tendency continued, considering that justification of the standpoints and statements within science during the Middle Ages was mostly founded on the power of authority.

cosmology allows for a more complete understanding of the world. The interpretation of the relations of the sources of all changes, have their joint source in a primary influence. This view, taken in Aristotelian philosophy as the explanation for the cosmos and the changes that occur on Earth, acquires a theoretical foundation by incorporating astrology into the cosmic system.

On the other hand, such an interpretation opens the possibility for understanding the relationships between the source of change and the specific changes, which open a space for a rational explanation of causal action, ie. production of new knowledge used in determining possible outcomes. The sky may be viewed as a virtual display of the future, and human action fits into the understanding of the natural order. Grisogono states that an individual possesses the divine gift of wisdom which he uses to research nature. For Grisogono, realization of the research of nature is not a purpose in itself, but is focused towards harnessing nature so that one may master the secrets of nature "*to his own favour*".[17] The knowledge of that nature, which may seem useful, also relates to knowledge of the present, and equally to knowledge of the future, or rather, prediction. Prediction is viewed only as one aspect of comprehension, which may be achieved "… *only with the assistance of the true science of prediction* …"[18] The emphasis is put on the usefulness, which manifests itself within one of the areas of Grisogono's interests – medicine.

The link between medicine and astrology is supported by linking medicine with the history of nature. Astrology, which was at the time indistinguishable from astronomy, was partially one of the seven free arts. Astronomy, along with music, arithmetic and geometry formed the *quadrivium*, the second stage in the studies of the seven liberal arts. The disciplines of the *quadrivium* were used in searching for ideal patterns that exist in space and time, and which are possible to be displayed

[17] *Sublimis deus creavit hominem et donavit ei spiritum sapientiae ut secreta naturae scrutaretur et in usum proprium (quae bona sunt) converteret*, Chrisogonus (1528): [17v].

[18] *... quod cum per veram scientiam prognosticandi ab exercitatis fieri possit*, Chrisogonus (1528): [5r].

mathematically. Thus, throughout the periods of the Middle Ages and the Renaissance, this connection between medicine and astrology had been determined as *astrologia medica*, ie. as *iatromathematica*. The justification for linking medicine and philosophy is found in Aristotle's work *De sensu et sensibili*, where the recognition of health and disease is the concern of the first principles, which one may arrive at with the assistance of philosophy.[19] The philosophy that is mentioned here is the philosophy of nature that is particularly concerned with the study of the four Aristotelian causes: the material cause (*causa materialis*), the formal cause (*causa formalis*), the efficient cause (*causa efficiens*) and the final cause (*causa finalis*). When dealing with health and illness, the efficient cause is of the most importance. In Aristotle's view, a science is defined by the object it studies. According to Aristotle's *Physics* (198a30-34), there are three kinds of substances: sensible and perishable, sensible and eternal, and immutable. Metaphysics (or the first philosophy) studies the immutable things. Physics studies the sensible and perishable things, whereas the sensible and eternal things are the object of study of astronomy / astrology.[20] All these sciences are considered to be a part of philosophy, or science in general. It would be quite anachronistic to apply the modern and contemporary distinction of sciences to the scientific thinking of the Renaissance period. *Scientia* is *one* thing and it generally coincided with the term *philosophia* in a broad sense. The part of philosophy that studies the first principles is metaphysics and the part of philosophy that studied

[19] *Sens.* 436ª17–436ᵇ1: φυσικοῦ δὲ καὶ περὶ ὑγιείας καὶ νόσου τὰς πρώτας ἰδεῖν ἀρχάς· οὔτε γὰρ ὑγίειαν οὔτε νόσον οἷόν τε γίγνεσθαι τοῖς ἐστερημένοις ζωῆς. διὸ σχεδὸν τῶν περὶ φύσεως οἱ πλεῖστοι καὶ τῶν ἰατρῶν οἱ φιλοσοφωτέρως τὴν τέχνην μετιόντες, οἱ μὲν τελευτῶσιν εἰς τὰ περὶ ἰατρικῆς, οἱ δ' ἐκ τῶν περὶ φύσεως ἄρχονται [περὶ τῆς ἰατρικῆς]. In Beare's translation it reads: "*It is a task [of naturalists] to know the primary principles of health and illness: namely, neither health nor illness can come to be in that which is devoid of life. Therefore, it is often that those who deal with nature end up in matters of medicine, while those in medicine who deal with that skill in a more philosophical* (more scientific) *way, take as primary medical principles those* (principles) *which deal with nature*", Aristotle 1995b: 693.

[20] This is the typical Renaissance interpretation of Aristotle's position. Aristotle's original text is more ambiguous and offers different interpretations (e.g. that there is only one science studying sensible perishable and sensible eternal things).

the movement of celestial objects was astronomy or astrology, and they were all seen as a part of the more general endeavour to understand the world. From this perspective, looking for an explanation of the efficient cause of illnesses in astrology and/or metaphysics was not considered to be a jump from one genus to another.

Grisogono sees humans as beings which unify the duality of two substances, the eternal and the perishable.[21] The eternal substance in humans is the soul, whilst the perishable is the body. The duality of human nature allows for the laws of the natural order, in this case the order that is valid for the entire universe, to be applied to the human being. The human part in the second substance, the eternal, based on the human soul, provides the foundations for removing any argument for absolute causality which comes from the natural order, and which would abolish human freedom.

Human body, as matter, is viewed as part of the natural order. The body further consists of four elements, and disease seen as a disturbance in the relationships between the four elements, the four humours or the bodily fluids.[22] A disorder amongst the four elements presumes the existence of that that which will suffer an illness, i.e. the individual. When there is a disturbance amongst the *humours*, the individual becomes the subject of medicine. The active cause of the disease is that which brings

[21] *Sicut homo ex duplici substantia constitutus est: aeterna s[ubstantia] et coruptibili …*, Chrisogonus (1528): [2v].

[22] The doctrine of humourism or humouralism is untraceably ancient, probably going back to ancient Egyptian medicine. The connection between the four elements and the four human fluids (and consequently characters) may have its roots to Empedoclean systematization of the four element theory. A more elaborated from of it can be found also in Isidore of Seville (Isidorus Hispalensis) who connected four *humours* with four seasons: black bile represents Earth, melancholy, and Autumn; yellow bile is Fire, Fire, and Summer, blood is Air, sanguine, and Spring; phlegm is Water, phlegmatic and Winter. Isidore was also one of the rare medieval and Renaissance authors whose doctrine of four humours was not a translation from Arabic into Latin. Cf.: *Sicut autem quattuor sunt elementa, sic et quattuor humours, et unus quisque humor suum elementum imitatur: sanguis aerem, cholera ignem, melancholia terram, phlegma aquam.* In our translation it reads: "*Just as there exist four elements, there exist four humours and each humour reflects its element, blood* (reflects) *air, bile fire, black bile earth, and phlegm water.*", Isidorus Hispalensis, *Etymologiae* 4.5.3.

about a disturbance amongst the *humours*.

Grisogono, citing Avicenna, displays how medicine understands the active cause of the disease: "*... distant causes are air, food and drink, whilst other unnatural things – six of them specifically – are those which we call external and simple causes.*"[23] Here, Grisogono begins to prepare the theoretical foundation from which he will, further in the text, extract the understanding of his foresight, for diseases as well as for other occurrences, through the movement of celestial bodies. This is how he corrects Avicennas's thought: "*... according to this, the Prince, as well as all the others who follow, have been mistaken when they set air to be the efficient cause*."[24]

Grisogono rejects air as an active cause of disease, on the basis of the assumption that air cannot determine the further course of the disease. Apart from this, the changes that occur in the air have their further causes in the celestial bodies, and: "*... there is no clear realization without celestial bodies, because they are the true cause of all the influences on health and disease.*"[25] The relationship between the celestial bodies and the changes that occur in the sky in relation to earthly changes, Grisogono further explains by attributing to the celestial bodies that:

> "*... they also initiate all the other partial causes, all up to the joint cause and death, moving the wandering planets as well as the fixed stars that influence this lower world with light, movement and influence, changing it, spoiling it and birthing it constantly, in order to, with the constant birth and death of individuals, preserve the kinds of material things, and air does not do this, other than indirectly, working to maintain it as a continuity*

[23] *... remotae [*sc. causae*]: aëres, cibi et potus, et reliquae sex res non naturales, quae extrinisicae causae et primitivae dicuntur*, Chrisogonus (1528): [2v].
[24] *Defecit ergo Princeps et turbae sequentes eum cum posuerunt aëres causae efficientes ...* , Chrisogonus (1528): [2r].
[25] *... de quibus non datur scientia distincta sine caelestibus corporibus: sunt enim illa causae adequatae omnium passionum sanitatis et aegritudinis*, Chrisogonus (1528): [2r].

between the celestial bodies and our world."[26]

The unity that links the primary cause and the earthly changes as a final consequence manifests itself via the celestial bodies and the changes that occur in the sky. Perceiving the sky as a mediator, as well as understanding the entirety of the cosmos as a continuous, unified influence of one part of the cosmos over another. Grisogono builds upon Aristotle's philosophy, claiming that: "*... it is entirely true what Aristotle writes in his first book of Meteorology, that it is necessary for this lower world to link onto the expanses of the higher world ...*"[27]

The authority of Aristotle is not the only justification, on which one may claim that the changes in the sublunar part occur under the influence of the supralunar part, because this influence can be proven through personal experience.[28] In this same place, he exhibits his own understanding of prediction as an 'understanding of future events', thereby equating the possibility of cognition relating to the present with cognition

[26] *Quae etiam movent omnes alias causas partiales usque ad causam coniunctam et mortem, moventes erraticos planetas et sideras qui agunt in haec inferiora lumine, motu et influentia alterando, corrumpendo, atque generando incessanter, ut rerum materialium species per individuorum continuam generationem atque corruptionem conserventur, quod aëres non faciunt nisi quodammodo instrumentaliter et ut continuant caelestia cum inferioribus*, Chrisogonus (1528): [2r].

[27] *Et sic verum est quod* Metheorum *primo scribit Aristoteles quod necesse est hunc mundum inferiorem contiguum esse superioribus lationibus …*, Chrisogonus (1528): [2r]. Grisogono calls upon the beginning of Aristotle's works *Meteorology* where Aristotle (*Metr*. 339ª20) states that: "*This world has a certain continuity of lower movement, thus its powers come from it*", the English translation is from Aristotle (1995a) *ad loc*. Other than the work *Meteorology* there are three other works of Aristotle that Grisogono uses to prove the existence of a link between the sublunar and supralunar part of the world, and these are *Physics*, *On the Heavens* and *On the Universe*. All four of these works are mentioned in the beginning of Grisogono's work *Speculum astronomicum*. Chrysogonus/Grisogono (2007): 12-14.

[28] *Sed postposita ratione et non munus auctoritate: quis etiam parum in actu practico exercitatus negare peterit quin per haec corpora caelestia possit haberi certa cognition de futuris effectibus producendis per constellationes proprias*, Chrisogonus (1528): [3v]. In our translation it reads: "*However, if we disregard this reason, as well as this authority, is there really anyone who would, while relying on practice, deny that one can, with the help of these celestial bodies, arrive at a secure realization of future events caused by their constellation?*"

relating to the future. If the supralunar is viewed as the factor which causes all the changes in the sublunar, through this assumption we can see how from the current state of the sky (the constellation of the celestial bodies), we can predict future events set to occur on Earth. The only condition that must be fulfilled to be able to predict a future event from a current constellation is that one has mastered the interpretation of the meaning of these celestial signs, which indicate earthly changes.

Here we see the multilayeredness of Grisogono's thought and, in relation to it, how the philosophical aspects of his works can singlehandedly be determined either as Aristotelian, or as Neoplatonic, considering that he alternates between both moments: Aristotle's understanding of causes and relations between the heavenly and earthly, and the elements of a Platonic understanding based on comprehension of the paradigm, which Plato calls Forms (sometimes ambiguously called 'Ideas').[29]

After determining the first element on the basis of which it is possible to know the future, i.e. the prediction as an active cause set in the supralunar area, Grisogono introduces another concept that should be taken into account when formulating predictions – the understanding of effect, that is, not only the mechanism of how the celestial bodies influence humans, but also what the causes of these influences are.[30]

Along with a specific practical application of astrology within

[29] Grisogono's relation towards Plato and Pythagoras is more visible in *Speculum astronomicum* where he deals with mathematics, music and astronomy, and approaches a Pythagorean-Platonic understanding of reality. Here, elements of a peripatetic categorical apparatus, like a substance, accidental, etc., are still visible, but his relationship with numbers changes, as the number is now observed a representation of order and legality amongst phenomena.

[30] *… sic etiam in prognosticorum vera et perfecta cognitio duplici scientia indigemus, cognitione causarum efficientium, quae adequatae producunt omnes aegritudines, salutem etque mortem, quae sunt caelestia corpora, … Necnon opus est cognitio a posteriori effectuum et accidentium …*, Chrisogonus (1528): [6v]. In our translation it reads: *"… and as such also in true and perfect cognition in prediction we require two cognitions, one of the default patterns which in equal measure produce all illnesses, health and death, and those are celestial bodies …; and we also require an a posteriori cognition of effect and accidents …*"

medicine, astrology also has another application. Its usefulness is not one only relating to the body. The application of astrology also spreads out to the entire ethical aspect of human action, and finally, astrology became a discipline by which one may achieve true happiness and bliss.

Here, Grisogono begins with the question of "*what is human happiness and bliss* [?]" and then states how one who is blissful "*... may only be one who possesses that to which he rationally aspires.*"[31] In reflecting on questions concerning what human happiness is, he begins from that which most people aspire to. This, he describes as earthly goods,[32] but concludes that happiness is not found in the same. In the next step, he claims that virtue and knowledge are equal, because:

> "*… it is impossible for someone who is full of knowledge to do evil … Those who are full of knowledge, because they know of evil, refrain and run from it or rather towards that which their reason tells them to go down the path of lesser evil.*"[33]

Here we see the famous Socratic doctrine: knowledge, happiness and the good – as a moral category – coincide. One cannot be said to be courageous if one does not know what courage is, i.e. it is not courage if it is not a conscious act. Moreover, one cannot be happy, or blissful, if one does not act according to virtue. This opens the question of which branch of knowledge – or discipline – deals with happiness. The question is even more pertinent, since it appears as if almost all disciplines linger on the attempts of achieving some specific knowledge, and are distant from achieving an overall understanding. According to Grisogono, the only discipline that approaches this ideal of a complete understanding is astrology. Astrology deals with the universal, as well as with the

[31] *Felicitatem quidem et humanam perfectionem longe quaesitam ab omnibus … Beatus ecquidem ille dicitur qui habet quicquid appetit per rationem*, Chrisogonus (1528): [22v].
[32] Chrisogonus (1528): [22v].
[33] *Omnis enim malus est ingorans, et omnis recte sciens bonus … scientes etiam a malo simpliciter cognito continentes erunt et fugient, vel minus malu, quod videbitur boni rationem tenere prosequentur*, Chrisogonus (1528): [22r].

understanding of the initial cause. This is a discipline nobler than the others.[34] It allows for an individual to raise his own intellect into higher spheres by observing the celestial bodies. The intellect is in this way separated from the perishable sublunar part where changes are irregular, unlike the higher world that is more constant and in which movements are regular. The mere observation of the stars has been associated with wisdom from ancient times, which is proven in hermetic sources and the mythical-religious history of astrology. Without regard to all the practical implications that Grisogono constantly repeats,[35] the highest form of knowledge, and with it bliss, is related to the understanding of God, and it is astrology that deals with this knowledge too, because it attempts to understand the movement of celestial bodies as the mediators that transfer movement from the Creator. Thus, the understanding of the celestial bodies as a cause is regarded as the highest form of learning. Grisogono believes that knowledge of the celestial causes provides "*… a greater understanding of the great God more so than of any other sublunar beings*."[36]

He additionally highlights the value of astrology, by defining it as the science "*with which we make the past and the future, the present*",[37] visible in his *Speculum astronomicum*. An identical stance which emphasizes a superiority of astrology in relation to other skills that people are capable of is found in his second work *De modo collegiandi, prognosticandi et curandi febres,* where he also notes that:

[34] Chrisogonus (1528): [23v].

[35] *Ad utilitatem perficit astrorum cognitio in actionibus humanis, quoniam praecognoscendo stelliferos motus in annona qualiscumque ventura fuerit. De ipsa quispiam recte providendno bene dictari peterit*, Chrisogonus (1528): [23r]. In our translation it reads: "*Knowing the stars is of use for various human activities, as knowing in advance the celestial movements which affect the harvest, give knowledge as to how it will be, and to as such undertake necessary measures.*"

[36] *... quae sane maiorem de ipso deo glorioso cognitionem praestant nobis qaum reliqua entia sublunaria*, Chrisogonus (1528): [23v].

[37] *Haec enim est illa scientia, qua praeterita et future praesentia facimus*, Chrysogonus/Grisogono (2007): 64.

> "… *only it observes the heavens and by it raises the human intellect above all other filth of the sublunar world in order to make it more similar to higher intelligences. Their understanding is significantly more perfect because all of the temporal differences and effects are viewed in a way that all of the past, current and future is easily observed.*"[38]

Conclusion

Grisogono, with his work *De modo collegiandi, prognosticandi et curandi febres* is taken as an example for the use of astrology during the Renaissance in southern Europe. Astrology was a discipline that could be determined as an irrational approach to the world, when we look at it with lenses of modern knowledge and value it in accordance. With its mythical approach to the world, wee see it as irrational endeavour. However, astrology in the time of the Renaissance appeared more as a discipline that offered a possibility of a rational approach towards the world, which is seen in the work of Grisogono. Astrology was used in a way to ensure the necessary knowledge according to which an individual could act correctly. Correct action was possible if we possessed knowledge. And astrology, with its teachings, allowed for the interpretation of the relationship between the heavenly and the earthy in order to enable the acquired knowledge to be used. Therefore, it appeared as a discipline that allowed Grisogono to step beyond a theoretical natural philosophy, by applying practical action to medicine and everyday life.

[38] *Quae caelestius est sola contemplatrix, humanumque intellectum adeo elevat ab omnium sublunarium sorde, ut ipsum summopere simile intelligentiis reddat. Quarum cognitio idem est perfectior quin omnes tempores differentias et effectus adeo mente revolvunt, ut cuncta sive praeterita, sive praesentia, sive futura facile percipiant,* Chrisogonus (1528): [23v].

Bibliography

Aristotle (1995a): 'Meteorology'. In: *Complete Works of Aristotle* I, transl. J.I. Beare, ed. J. Barnes (Princeton): 555-636.

Aristotle (1995b): 'Sense and sensibilia'. In: *Complete Works of Aristotle* I, transl. J.I. Beare, ed. J. Barnes (Princeton): 693-714.

Banić-Pajnić, E. (2009): 'Astrologijska medicina u djelima renesansnih filozofa M. Ficina i F. Grisogona', *Prilozi za istraživanje hrvatske filozofske baštine* 35/1–2 (69-70): 11-35.

Beecher, D. (2002): 'Ficino, Theriaca and the Stars'. In: *Marsilio Ficino: His Theology, His Philosophy, His Legacy*, eds. M.J.B. Allen, V. Rees & M. Davies (Leiden, Boston & Cologne): 243-256.

Belicza, B. (1974): 'Medicinska shvaćanja Federika Grisogona'. In: Dadić & Petricioli 1974: 103-112.

Cabassi, N. (2013): 'Alessandro Benedetti i Federik Grisogono: svjedoci kuge / Alessandro Benedetti e Federik Grisogono: testimoni della peste', *Miscellanea Hadriatica et Mediterranea* 1: 79-107.

Chrisogonus, F. (1528): *De modo collegiandi, pronosticandi et curandi febres, necnon de humana felicitate ac denique de fluxu et refluxu maris licubrationes nuperrime in lucem edite* (Venice).

Chrysogonus/Grisogono, F. (2007): *Speculum astronomicum/Astronomsko zrcalo*, eds. M. Girardi-Karšulin & O. Perić, transl. T. Ćepulić (Zagreb).

Dadić, Ž. & **Petricioli**, I. (eds.) (1974): *Zbornik radova o Federiku Grisogonu* (Zagreb & Zadar).

French, R. (1994): 'Astrology in Medical Practice'. In: *Practical Medicine from Salerno to the Black Death*, eds. L. García-Ballester, R. French, J. Arrizabalaga & A. Cunningham (Cambridge): 30-59.

Grisogono Bartolačić, F. (1990): 'Rasprava o načinu dijagnosticiranju u kolegiju, prognoziranju i liječenju groznica kao i o ljudskoj sreći i napokon o morskoj plimi i oseci netom objavljena godine 1528. / *De modo collegiandi, pronosticandi et curandi febres; necnon de humana felicitate, ac denique de fluxu maris, lucubrationes nuperrime in lucem edite* MDXXVIII'. In: *Rasprave i građa za povijest znanosti* 6, eds. B. Kesić & B. Belicza (Zagreb): 1-56.

Grmek, M.D. (1990): 'Životna staza Federika Grisogona Bartolačića'. In: *Rasprave*

i građa za povijest znanosti 6, eds. B. Kesić & B. Belicza (Zagreb): 1-11.

Grmek, M.D. (1985): 'Arhivski podaci o doktorskoj promociji zadarskog učenjaka Federika Grisogona', *Prilozi za istraživanje hrvatske filozofske baštine* 21-22: 97-100.

Isidorus Hispalensis: *Etymologiarum sive Originum libri XX*.

Mirandulanus, J. P. (1971): 'Disputationes in astrologiam'. In: *Opera omnia* I (Torino): 502-504.

Mover, A. (1999): 'The Astronomers' Game: Astrology and University Culture in the Fifteenth and Sixteenth Centuries', *Early Science and Medicine* 4/3: 228-250.

Page, S. (2002): *Astrology in Medieval Manuscripts* (Toronto & Buffalo).

Siraisi, N.G. (2007): *History, Medicine, and the Traditions of Renaissance Learning* (Ann Arbor).

Skuhala Karasman, I. (2013): *U potrazi za znanjem o budućem: predviđanje u srednjovjekovnoj i renesansnoj prirodnoj filozofiji – H. Dalmatin, F. Grisogono i J. Dubrovčanin* (Zagreb).

Thorndike, L. (1941): *A History of Magic and Experimental Science*, Vol. 5 (New York).

Appendix: Bibliography of works on Federik Grisogono (in a chronological order)

Thorndike, L. (1941): *A History of Magic and Experimental Science,* vols. V-VI (New York).

Grmek, M.D. (1968): 'Prinosi za poznavanje života i rada zadarskog renesansnog liječnika, kozmografa i astrologa Federika Grisogona' *Radovi Zavoda za povijesne znanosti JAZU u Zadru* 15: 61-90.

_____. (1970): 'Životne zgode i astrološko-medicinske ideje Zadranina Federika Grisogona', *Liječnički vjesnik* 92: 679-686.

_____. (1972): 'U povodu petstote obljetnice rođenja zadarskog učenjaka Federika Grisogona', *Zadarska revija* 5: 283-305.

Dadić, Ž. (1972): 'Federik Grisogono i problem plime i oseke', *Zadarska revija* 5: 306-311.

Stipanić, E. (1972): 'Federik Grisogono, Zadarski renesansni polihistor', *Dijalektika* 4: 115-134.

Supičić, I. (1972): '*De musica integritate* Federika Grisogona-Bartolačića', *Zvuk* 124-125: 99-103.

Bajsić, V. (1973): 'Grisogonove filozofske koncepcije s obzirom na skolastiku i teologiju', *Encyclopaedia moderna* 24: 40-45.

Brida, M. (1973): 'Federik Grisogono o problemu ljudskog savršenstva i sreće', *Praxis* 1-2: 169-176.

Stipanić, E. (1973): 'Problem paralela kod Federika Grisogona', *Matematički vesnik* 4: 369-377.

Antoljak, S. (1974) '*Artium et medicinae doctor* Federik Grisogono, njegova obitelj i javno djelovanje u Zadru'. In: Dadić & Petricioli 1974: 27-54.

Bajsić, V. (1974): 'Grisogonove filozofske koncepcije s obzirom na skolastiku i teologiju'. In: Dadić & Petricioli 1974: 133-142.

Belicza, B. (1974a): 'Medicinska shvaćanja Federika Grisogona'. In: Dadić & Petricioli 1974: 103-112.

Brida, M. (1974b): 'Federik Grisogono o problemu ljudskog savršenstva i sreće'. In: Dadić & Petricioli 1974: 123-132.

Dadić, Ž. (1974): 'Grisogonovo rješenje problema plime i oseke'. In: Dadić & Petricioli 1974: 95-102.

Dadić, Ž. & **Petricioli**, I. (eds.) (1974): *Zbornik radova o Federiku Grisogonu, zadarskom učenjaku (1472–1538)* (Zadar & Zagreb).

Dugački, V. (1974): 'Federik Grisogono i kužne bolesti'. In: Dadić & Petricioli 1974:

113-122.

Grmek, M.D. (1974): 'Životna staza zadarskog učenjaka Federika Grisogona'. In: Dadić & Petricioli 1974: 55-70.

Stipanić, E. (1974): 'Matematički pogledi Federika Grisogona'. In: Dadić & Petricioli 1974: 71-94.

Supičić, I. (1974): 'Glazba u djelu Federika Grisogona'. In: Dadić & Petricioli 1974: 143-149.

Tuksar, S. (1974): 'Elementi antičkih i srednjovjekovnih teorija glazbe u djelu Federika Grisogona Bartolačića', *Arti musices* 5: 49-66.

Banić-Pajnić, E. (1985): 'Federicus Grisogono: *De divinis mathematicis*', *Prilozi za istraživanje hrvatske filozofske baštine* 21-22: 83-95.

Grmek, M.D. (1985): 'Arhivski podaci o doktorskoj promociji zadarskog učenjaka Federika Grisogona', *Prilozi za istraživanje hrvatske filozofske baštine* 21-22: 97-100.

Belicza, B. (1990): 'Federik Grisogono Bartolačić i njegove rasprave o uzrocima i vrstama groznica'. In: *Rasprave i građa za povijest znanosti* 2/6, eds I. Padovan & B. Belicza (Zagreb): 13-23.

Girardi-Karšulin, M. (1990): 'Cassirerova interpretacija renesansne astrologije, F. Grisogono i F. Petrić', *Prilozi za istraživanje hrvatske filozofske baštine* 31-32: 147-166.

Dadić, Ž. (1991): *Egzaktne znanosti hrvatskoga srednjovjekovlja* (Zagreb): 177-188 (the chapter 'Federik Grisono i vrhunac srednjovjekovnog shvaćanja znanosti').

Banić-Pajnić, E. (1993): 'Matematika i ljudska sreća (prema Federiku Grisogonu)', *Prilozi za istraživanje hrvatske filozofske baštine* 37-38: 167-176.

Girardi-Karšulin, M. (2007): 'Temeljni problem i recepcija *Astronomskog zrcala* Federika Grisogona (1472-1538)'. In: Federicus Chrysogonus/Federik Grisogono, *Speculum astronomicum / Astronomsko zrcalo*, trans. T. Ćepulić, eds. M. Girardi-Karšulin & O. Perić (Zagreb): xiii-xxxvii.

_____. (2007): 'Utjecaj Pietra Pomponazzija na Federika Grisogona: Grisogono između platonizma i aristotelizma', *Prilozi za istraživanje hrvatske filozofske baštine* 33/1-2 (65-66): 35-42.

_____. (2007): 'Federik Grisogono (Federicus Chrysogonus) und der Begriff der nützlichen theoretischen Wissenschaft', *Prolegomena* 6: 279-294.

Banić-Pajnić, E. (2009): 'Astrologijska medicina u djelima renesansnih filozofa M. Ficina i F. Grisogona', *Prilozi za istraživanje hrvatske filozofske baštine* 35/1-2 (69-70): 11-35.

Festini, H. (2009): 'Grisogonov iskoračaj u novu znanost', *Filozofska istraživanja*

116: 725-732.

Girardi-Karšulin, M. (2010): 'Grisogonovo *Astronomsko zrcalo* (*Speculum astronomicum*) i *Zrcalo astronomije* (*Speculum astronomiae*) Alberta Velikog', *Prilozi za istraživanje hrvatske filozofske baštine* 36/1-2 (71-72): 29-37.

Paušek-Baždar, S. (2011): 'Federik Grisogono i alkemija', *Acta medico-historica Adriatica* 9/2: 173-188.

Cabassi, N. (2013): 'Alessandro Benedetti i Federik Grisogono: svjedoci kuge / Alessandro Benedetti e Federik Grisogono: testimoni della peste', *Miscellanea Hadriatica et Mediterranea* 1: 79-107.

Skuhala Karasman, I. (2013): 'Federik Grisogono', *U potrazi za znanjem o budućem: predviđanje u srednjovjekovnoj i renesansnoj prirodnoj filozofiji* (Zagreb): 158-172.

Sažetak

Ovim bismo tekstom željeli postići dva cilja: s jedne strane predstaviti Federika Grisogona kao renesansnog hrvatskog filozofa i s druge, liječnika koji nije široko poznat u sekundarnoj literaturi na engleskom jeziku. Nadalje, primjer na kojemu ćemo uvesti Grisogonovu misao jest uloga astrologije u medicini i, općenito, utjecaju na čovjeka. Grisogono se, naime, ističe kao jedan od najznačajnijih i najgorljivijih pobornika uporabe astrologije u medicini. Kontekstualizirajući njegovu misao, ukazujemo na to da je njegov pristup nepravedno zanemaren uslijed suvremenog razumijevanja astrologije kao iracionalne pseudoznanosti, dočim se u kontekstu renesanse ona mora razumjeti kao korak naprijed u pokušaju racionalnog objašnjenja svijeta i čovjeka u njemu.